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Vol. X MAY, 1957 No. 104

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Front Cover : Class "A1" 4-6-2 No. 60123 *H. A. Ivatt* heads the up "Queen of Scots" out of Leeds Central.

[*Photograph by Eric Treacy*

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★ *City of Truro* restored—the famous Great Western 4-4-0, which has been "exhumed" from York Museum and overhauled for service on special excursions, worked a Swindon running-in turn on March 25, 1957, when it was photographed at Bath. [*Ivo Peters*

the editor's news & views

TALKING OF TRAINS

The diesel Pullmans

As firm believers that high-speed trains on suitable services show dividends in several directions, we shall welcome the new multiple-unit Pullman diesels that enter service next year (see page 237). On the other hand, it is a pity we have had to wait so long for a change of heart on the question. It is only a year or two since British Railways were meeting requests for the revival of the pre-war streamliners with a refusal on the grounds that the public would prefer a policy of uniform acceleration as circumstances permitted, rather than the singling out of a handful of trains for special attention (though the "Bristolian" and "Elizabethan" managed to get into the timetable somehow). From those with first-hand experience of working the pre-war flyers one often heard the argument that the difficulties they created in the operation of slower-moving traffic, especially freight, more than offset any extra revenue they obtained—in fact, that they brought no cash benefit to the railway whatsoever. What has happened in four or five years suddenly to solve these problems, change the outlook and make it possible to introduce a 100 m.p.h. flyer, not on the East Coast Route, where the performance of trains like the "Talisman" and the "Elizabethan" often suggests that pre-war streamliner timings are still feasible with steam, but on the heavily freight-occupied Midland main line from Manchester to St. Pancras of all places? True, there has been considerable work on permanent way improvement and some increase in the number of fitted freights operated in recent years, while presumably British Railways feel bound to offer an alternative fast service during electrification work on the Western Division main line, but these factors hardly add up to a revolutionary change in conditions. In other words, to all appearances we could have had a "Silver Jubilee," "Coronation" and the rest back months ago and forestalled some of the unflattering comparisons made between British Railways and other European systems on this matter of regaining pre-war standards of passenger travel. Freight, we agree, is the lifeblood of British Railways and it is vital to their survival that the recapture of lost goods traffic should receive the principal attention. But the passengers who used trains like the "Silver Jubilee" and who will use the new diesel flyers are mainly the industrialists who are British Railways' best freight customers—regular travellers who want a fast luxury passenger service and who are prepared to pay extra for it. As many other railways

abroad have long realised, apart from the psychological fillip it gives to the men who operate it, the high-speed luxury train is paradoxically as good a piece of propaganda for increased freight traffic as it is for passenger traffic.

●

This summer's Southern timetable will show welcome restoration of two-hour timings to Bournemouth on the 8.20, 10.30 *a.m. and* 6.30 *p.m. from Waterloo, and the up trains at* 12.40, 2.40 *and* 6.40 *p.m. from Bournemouth Central.*

●

Midland interval service

THE Midland main line gets a good instalment of acceleration this summer. As a result of track improvements, says British Railways in advance publicity for the summer timetable, the whole of the daytime services between St. Pancras, Leicester, Nottingham, Derby, Sheffield and Manchester are being revised. Additional semi-fast trains will be introduced to enable long-distance trains to omit certain intermediate calls and revert to pre-war timings, with savings of up to 61 min. The 9 a.m. from St. Pancras to Edinburgh (Waverley), for example, will be retimed to start at 9.15 a.m. and will be accelerated by 40 min., while the 10.5 a.m. from Edinburgh to St. Pancras will be speeded up by 26 min. Regular interval departures will be introduced as far as possible from St. Pancras—at 8.15, 9.15, 10.15 a.m., 12.15, 2.15, 3.15, 4.15, 8.15 and 9.15 p.m. to Nottingham, Leicester and Sheffield, and at 10.25 a.m., 12.25, 2.25 and 4.25 p.m. to Leicester, Nottingham, Derby and Manchester ; from Manchester trains will leave at 7.25, 10.25 a.m., 12.25, 2.25, 3.25 and 4.25 p.m. to Derby and beyond. As we have previously reported, on the East Coast Route "The Morning Talisman" is to run between King's Cross and Edinburgh in 6 hrs. 45 min. each way ; the present fast afternoon services between King's Cross and Edinburgh will continue to run and will be named "The Afternoon Talisman." More new Anglo-Scottish trains (in addition to the "Caledonian," announced last month) will include Sunday afternoon fast services between King's Cross and Edinburgh, calling only at York and Newcastle, and a Saturday morning service from Peterborough to Edinburgh to cater for holiday traffic from intermediate stations on the East Coast route. Other improvements to main line services will include a new train between Paddington and Wolverhampton on Sunday evenings and the re-timing of the "South Wales Pullman," which will call additionally at Bridgend and Neath. In all, 98 long-distance trains will be speeded up to save from 10 to 75 minutes and 84 (65 last year) will make non-stop runs at an average speed of 60 m.p.h. or more.

●

A new car-sleeper train will run from Marylebone to Glasgow (St. Enoch) on Monday and Wednesday nights, and from Glasgow to Marylebone on Sunday and Tuesday nights, whilst the present service between King's Cross and Perth will be augmented by a duplicate train on three days a week in each direction between Marylebone and Perth. Altogether seven car-sleeper services will operate this summer.

●

B.R. holds the gain

STATISTICS issued by the B.T.C. show that in the four weeks ended February 24, British Railways were holding and slightly improving their gains of traffic as a result of the oil shortage. As against the same period in 1956, British Railways' passenger takings were up by 23 per cent and their freight receipts by 15 per cent. Compared with January's 17 per cent increase over 1955 which we reported last month, there was a 20 per cent rise in February in receipts from the valuable merchandise and livestock traffic, still more of which is evidently switching from road to rail; in fact, remembering the downward trend of this class of freight in recent months, it is probable that fuel rationing has added 25 per cent to what would have been the revenue had the crisis not occurred. Some evidence of the weight of the Christmas travel rush last year is to be found in the recently published figures for passenger journeys originating on British Railways in December. The restrictions on fuel came into force on November 7 and by the end of that month the total increase in passenger journeys on all Regions compared with November, 1955, was only 1,226,000, or 1.7 per cent. In December the increase over 1955 jumped to 8,201,000, or 10.6 per cent, the significant proportion of this total being the additional 2,532,000 full fare-paying passengers; as the November increase under this heading was 1,218,000, it is reasonable to suppose that not far short of a million more journeys were made on British Railways over Christmas, 1956, than in 1955. Oddly enough, the Eastern Region alone failed to show any full fare increase on 1955—in fact, its figure was down by 1 per cent; the heaviest increases were felt by the Western Region, which originated 365,000 or 16.9 per cent more full fare-paying journeys than in the previous December, and the Southern, which originated 1,550,000 or 16.7 per cent more. The Southern figure, in fact, was nearly three times as many as the increase on any other Region, the nearest rival being the L.M.R., on which 529,000 more full fare-paying

S. & D. 2-8-0s AT HOME AND AWAY

Above : A recent picture of No. 53806 passing Bath Junction on its way out to the Mendips with the 12.35 p.m. freight, on February 16, 1957. The fireman is retrieving from the tablet exchange apparatus the token for the single line section to Midford, which has just been picked up. [*Ivo Peters*

Below : A rare shot of an S. & D. 2-8-0 off the beaten track. In the 1914-18 war No. 85 (now No. 53805) was borrowed by the Midland Railway for coal haulage between Toton and London, and is here seen passing Elstree with a down load of empties during that period. [*Locomotive Publishing Co.*

journeys began in December 1956 than in the same month of 1955. It is worth noting that the S.R.'s December season ticket journey increase of 2,752,000 on 1955 was also a long way ahead of the others, the nearest increase being one of 1,185,000 on the E.R. Indeed, how many readers realise that every month over 10 million more passenger journeys—granted, many of them short distance—originate on the Southern than on any other Region of B.R.?

●

With the commencement of the summer timetables, multiple-unit diesels will come into use between Upminster, Ockendon, Grays and Tilbury Riverside ; Manchester and Crewe ; and on local services radiating from Birmingham (Snow Hill) to Leamington and Stratford-on-Avon, Bewdley and Wellington. In August they will be introduced between Newport and Blaenavon, Newport and Brynmawr, and Aberbeeg and Ebbw Vale.

●

Developments at Leeds

ACCORDING to local report, important changes in the handling of traffic at Leeds are under consideration. It is believed that the original plans to modernise and resignal the Central station have been scrapped and that it may now face closure for passenger purposes, although the ex-L.N.W. and L. & Y. High Level goods depot would probably have to be retained, as it is the only yard conveniently placed to serve the city centre and others would be too costly to redevelop for the purpose. All passenger traffic would then be concentrated on the City station, and some new approaches would be necessary. The ex-L.N.E.R. route into the city from Wakefield and Doncaster would be modified in the Copley Hill area, so that trains could swing across to the ex-L.N.W. Whitehall bank down to Whitehall Junction, which, being the point of convergence with the ex-Midland and N.E. routes to Bradford and the North, would in this event become a keypoint in the operation of the city's traffic. Diesel traffic, according to this report, would be concentrated in the former Midland Wellington section of the City station ; a new spur from Wellington to Holbeck would be required to facilitate its use by Bradford short line diesel services, and the layout would have to be altered to enable the Leeds-Huddersfield-Manchester diesel trains to get from Wellington station on to their main line without having to reverse into Leeds City "New," as is necessary at present. The bay platforms Nos. 7-10, it is believed, would be connected to make two new through roads in the "New" section of the City station and would therefore revert to their original state before the station was modified in the last century. New station offices to replace those in the concourse separating the bays would be erected on the site of the old Queen's Hotel outside the station, which has been used as a car park since the opening of the New Queen's Hotel in 1938.

●

It still grieves us that no use has been found for those "Devon Belle" *Pullman observation cars. The Swiss Federal Railways have recently built a similar vehicle which they are using in an ingenious way, overcoming the objection that such a vehicle earns no revenue. If you can produce a coachload of first class passengers and are prepared to pay a supplement as well, then the Swiss will attach an observation car (which has its own kitchen) for your exclusive use to the train you want to take. We warmly commend the idea to British Railways.*

●

The Ludlow collision

THE collision at Ludlow in the early hours of September 6 last points an important moral at a time when Press agitation has encouraged a general lay belief that A.T.C. is the answer for all railway accident prevention. Aside from the fact that there are types of accident which it can do nothing to forestall, it has to be remembered that, like all mechanisms, A.T.C. equipment is occasionally fallible, and that it must therefore be regarded as an aid (and an invaluable one, let it be emphasised), not a substitute for vigilance by the engine crew. At 2 a.m. on the morning of September 6, working on the North-and-West main line in the Ludlow area had been interrupted by a lorry colliding with a level-crossing gate near Bromfield, to the north, and blocking the up track, so that single line working was in force. As a result the 4.45 p.m. Penzance-Crewe, headed by "Jubilee" 4-6-0 No. 45644, was brought to a stand for signals at the Ludlow starter, north of the station. The following 2 p.m. parcels from Penzance to Crewe, headed by W.R. 2-6-0 No. 9306, then ran through the Ludlow distant, home and intermediate home signals, all of which were on, and collided at an estimated 50 m.p.h. with the rear of the express. Fortunately the back of the latter was brought up by a wooden-bodied bogie milk van and a bogie brake, which absorbed the force of the collision to such effect that the rest of the train was little harmed, and the only casualties to passengers were two cases of shock. The two rear vehicles of the express were completely smashed. The steel underframe of the rearmost bogie van was driven under that of the milk van in front, and then both underframes were forced under the brake second ahead ; the wooden body of the

milk van was crushed and the 2-6-0 drove right through the body of the rear brake, becoming completely enveloped in it. The force of the collision divided the express, the engine and front six vehicles being propelled forward about two coach lengths. The Inspecting Officer, in his report on the collision, does not accept the parcels train driver's claim that the Ludlow distant and home signals were clear, that he received a confirmatory bell signal from his cab A.T.C. apparatus concerning the distant's aspect, or other items of his evidence, holding them to be at variance with the statements of other witnesses, whose evidence was consistent and well corroborated on the whole. The driver admitted that he regarded A.T.C. as his "guardian angel," but on No. 9306 the A.T.C. siren had unhappily been penetrated by a thread of cotton waste. The Inspecting Officer regards it as reasonably certain that this thread of waste jammed the siren's spinner when the engine passed over the dead ramp of the Ludlow distant, rendering the siren inoperative. The rest of the engine's A.T.C. apparatus was in working order, however, so that the driver, not hearing the siren, must have involuntarily cancelled the automatic brake application which would have followed passage of the dead ramp. The driver admitted that after this he did not see the home signal, and although he claimed to have spotted the intermediate home at danger and to have begun braking at the time of the collision, the weight of other evidence was that the engine was still steaming and that there was no noticeable brake application before the impact; moreover, the Inspecting Officer considered that the siting of the signals was such that he would have had over 500 yards in which to brake had he taken action when he first saw the intermediate home, and with a well braked train prompt action even then might have avoided a collision.

●

York station, recently transformed by modern cathode electric lighting, is now being painted in colours which will be the standard for all North Eastern Region stations, depots and installations as these become due for repainting. The principal colour is Oriental blue and other colours being used include silver birch, light grey, mid-grey and the Regional colour of deep orange.

●

The new Watford electrics

BY the end of March the first four of the 57 three-car units with G.E.C. electrical equipment being built at Eastleigh, S.R., for the London area electrified services of the L.M.R. had been delivered to Stonebridge Park depot. The new stock is generally similar in outline to the latest Southern suburban units, but each car is on an underframe of 56 ft. 11 in. length over headstocks, over 5 ft. shorter than the S.R. vehicles. Westinghouse electro-pneumatic brakes are provided, but unlike the S.R. units the new L.M. stock is screw-coupled with side buffers. Each three-car unit is formed of a motor brake saloon second seating 74, a trailer second seating 108 in nine compartments and a driving trailer saloon second seating 74. Unusually, the driving trailer has the same layout as a motor coach, including a guard's and luggage compartment. The total seating capacity (256) compares very favourably with that of an existing Watford line saloon unit (163), but is below that of the present-day compartment unit (288); however, there is more standing room in the new stock and the additional luggage compartment should keep out of the passenger accommodation some of the bulky impedimenta, including mailbags, which find their way in nowadays owing to the limited baggage space in the existing three-car units. The position-light route indications are evidently to go, as a Southern-type headcode indicator is fitted to the new units in place of the four corner headlamps on the old stock. At the end of March the new units were occupied with crew training between Stonebridge Park, Watford and Broad Street.

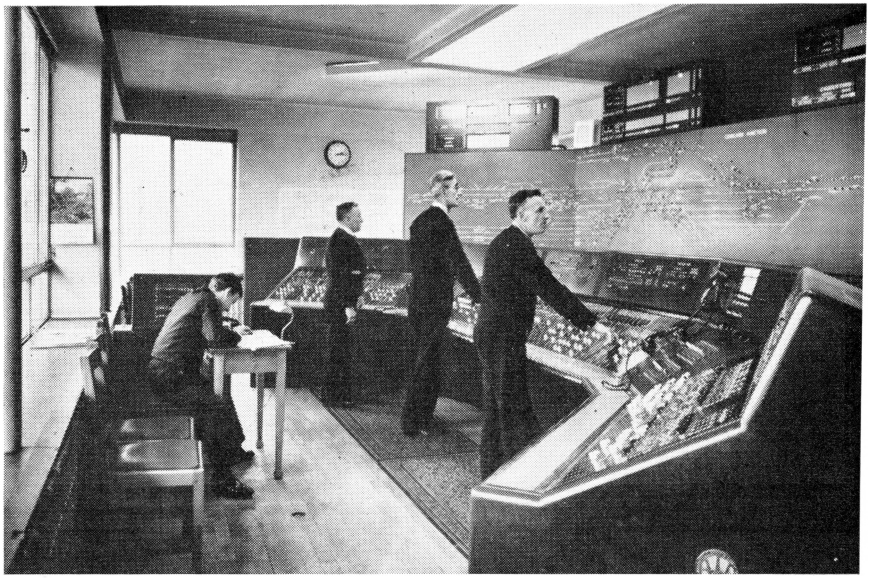
●

The B.T.C. have placed an order with the North British Locomotive Co. Ltd., for five 300 h.p. diesel-hydraulic shunting locomotives for use in the L.M.R.

●

The end of a chapter?

WHAT may well be the last high-speed steam locomotives to be built in the world are nearing completion at Krupp's works in Germany, reports the March-April issue of our associated contemporary, *The Locomotive*. When the Germans were building up again their renowned inter-city high-speed services after the war, they could not secure swift enough delivery of diesel multiple-units for all their plans. Since their existing stock of heavy steam Pacifics would have been wasted on the light four-coach "F" trains, the engineers of the German Federal Railway turned their thoughts to a new and lighter design economically more suited to this "F"-train work. Post-war developments in material and close co-operation between German industry and the railway, however, have enabled the production of a highly interesting three-cylinder simple 4-6-2 design, in which considerable weight has been saved by modern construction methods, that will be capable of economic use both on lightweight "flyers" and on the heavy



NEW SIGNALBOX AT COWLAIRS

This new signalbox at Cowlairs has taken over the work of eight signalboxes formerly in service at Cowlairs station, Cowlairs Central, Springburn, Cowlairs West, Cowlairs North, Cowlairs East, Bishopbriggs and Cadder West. The total route mileage covered by the accompanying resignalling scheme with colour lights is 6½, and involves the Glasgow (Queen Street H.L.)-Edinburgh (Waverley) main line and certain branches. The new signalling is controlled from the route-interlocking panel seen in the picture ; above it are an illuminated diagram of the layout and storage-type train describers. The point operation is electro-pneumatic, and there are some 40 multi-unit colour-light signals of two, three and four aspects ; shunt and call-on signals are of the two-aspect position-light type. The new cabin controls 52 individual points and 216 individual route switches to do the work of 245 working levers formerly installed in the eight mechanical boxes. [*British Railways*

international trains. Two prototypes of this Class "10" are being built and they embody many notable developments, including the extended use of roller bearings—for example, on the inside big-end—and an even more liberal adoption of cast steel and welding than has characterised other German post-war designs. The engines are intended for speeds of 100 m.p.h. but are streamlined only around the cylinders and under the smokebox, as exhaustive trials with partly and fully streamlined locomotives have convinced the Germans that up to this speed limit the advantages of full streamlining are more than offset by the extra weight, cost and difficulty of maintenance; on the other hand, they find there is definitely a case for protecting the cylinder group against cooling, dust and icing-up in very cold conditions by semi-streamlining. One of the two prototypes is to be an oil-burner; the other will normally burn coal, but is equipped with two supplementary oil-burners in the boiler backplate which can be brought into use for peak loads, when an extra effort is needed to make up time, or on long runs when clinker begins to form in the grate. Other refinements in these new Pacifics, of which a full technical description appears in the *Locomotive* issue previously mentioned, are: air-operated reversing gear, a covered-in coal bunker with coal-pusher apparatus in the tender, no fewer than thirty electric inspection lights at various points of the engine and tender, and a well-appointed, enclosed cab with floor-heating at the crew positions. The designs for these engines were drawn up as long ago as 1952 and the lengthy delay in putting them into practice means, a European expert tells us, that they are now probably too late to save the day for steam: it is likely, in fact, that the class, like the B.R. Class "8" 4-6-2, will end with the prototype.

●

Another private British railway has succumbed to road transport. This is the Whittingham Mental Hospital Railway of the Lancashire C.C., whose chief function was to carry coal from Grimsargh, on the former L. & Y.-L.N.W. Joint Preston-Longridge branch, to the hospital, though it maintained some vintage stock for passenger transport of its staff and visitors. The County Council has closed the line, which was described in our February, 1952, *issue, because they find road transport cheaper.*

Another "Scot" feat

THIS month's photograph "from our files" (*see below*), with its memory of the L.M.S. theft of the L.N.E.R's Anglo-Scottish non-stop thunder in 1928, reminded us of another "Royal Scot" feat of the same kind in the following year which readers may have forgotten. The Bussey Coal Distillation Co. were opening a new plant at Glenboig in the summer of 1929, and the L.M.S. put on a special sleeping car train to convey the guests from Euston to Lanark, where they were transferred to a luxury day train for the final stage of the journey to Glenboig, on the main line out of Glasgow to Perth, and later their return to London. Contemporary accounts note that this latter train set included two cinema cars (converted bogie brakes, to judge from illustrations reproduced at the time), a lounge and an observation saloon, as well as restaurant accommodation; not only that, it was wired up so that when guests sat down to a regal banquet on their return from Glenboig to Euston, speeches could be relayed throughout the eleven-coach train. But this southbound journey on July 21, 1929, principally holds a place in the record books because the 395½ miles from Glenboig to Euston were run non-stop (in eight hours), the engine concerned being "Royal Scot" No. 6127, then named *Novelty*.

●

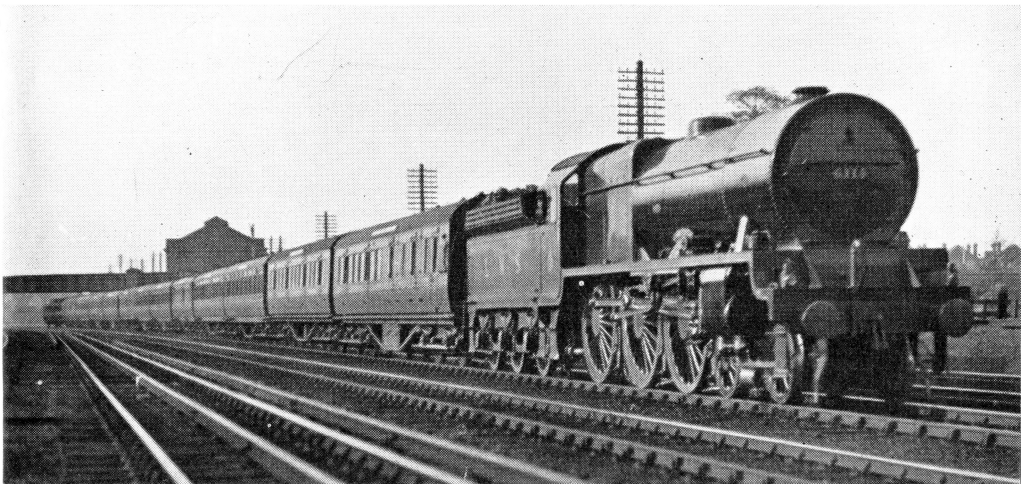
Mr. George Williams, a Senior Industrial Officer of the Council of Industrial Design, has been appointed Design Officer to the B.T.C. He will be responsible for the administration of the work of the Commission's Design Panel which, as announced last autumn, has been set up to advise the Commission on the appearance of new equipment design.

●

The I.R.A. and the G.N.R.

THE engine involved in the unfortunate affair at Londonderry on March 2, when I.R.A. men "hi-jacked" a G.N.R. (I) freight train and sent it careering crewless into the terminus, was Class "SG3" 0-6-0 No. 13. Happily, the damage to the engine was not as extensive as was at first believed and it was able to proceed under its own steam to Dundalk Works for examination, we hear from Mr. R. C. Ludgate. The train was the 26-wagon 9.30 p.m. goods from Enniskillen to Londonderry via Omagh of the previous night. It was halted two miles from Strabane at about 3 a.m. by masked I.R.A. gunmen, who forced the crew to abandon it and then took over themselves, announcing that they knew their way about the footplate because one of them had worked for British Railways. Fortunately Londonderry was warned of what was happening because the signalman at St. Johnston, on going down to the trackside to make the token exchange and also to ask the driver why the train was now so late, caught sight of the masked men on the footplate and immediately alerted the terminus. When the Londonderry signalmen saw the train approaching at speed and realised that the crew had by then abandoned it, the man in the North cabin had the presence of mind to change the points from the goods yard, where a derailment would have caused a serious blockage, and

FROM OUR FILES—No. 2 On Friday, April 27, 1928, the L.M.S. stole a march on the L.N.E.R., which was to inaugurate non-stop running between Kings Cross and Edinburgh the following Monday, by running the "Royal Scot" in two parts from Euston non-stop to Glasgow and Edinburgh. The Glasgow portion was hauled by "Royal Scot" No. 6113 *Cameronian*, the Edinburgh section by compound 4-4-0 No. 1054. According to contemporary accounts these arduous runs were achieved by volunteer crews, whose only stipulation was that adequate tenders should be provided. This picture, taken at the time, shows No. 6113 fitted with the tender it used for the non-stop run, on an up Western Division express at Kenton. Can any reader provide more information on this tender and its coal and water capacity ?



route the runaway into a platform in the terminus where the buffers were backed by a solid concrete floor. As a result the damage was restricted in area and the station could be opened for passenger traffic quite early in the day. A later report said the G.N.R. were thinking of claiming on the County Donegal authorities for the damage caused, since it resulted from an "unlawful assembly" in that part of the Republic, where the train was held up. The gunmen probably jumped off at Carrigans, just before the train passed out of Donegal again.

●

The late R. H. Whitelegg

THE death occurred in London on March 9 last of Robert H. Whitelegg, who succeeded his father, T. Whitelegg, as Locomotive Superintendent of the L.T. & S.R. in 1910. He continued the well-known line of Tilbury 4-4-2 tanks begun by his father, and introduced into them an ingenious variable blastpipe which was coupled to the reversing shaft so as to produce the optimum blast for any given cut-off. One of these locomotives, No. 80, *Thundersley*, was exhibited in its original colours at Southend last year during the centenary celebrations of the line. Mr. Whitelegg later brought into use the first 4-6-4 tank engines built for a British main line railway; these were subsequently taken over by the Midland. In 1918, Mr. Whitelegg succeeded Peter Drummond on the Glasgow & South Western Railway and produced some even larger 4-6-4 tank engines for the Glasgow and Ayr services; he also projected a 4-6-6 design of tank engine for express work between Glasgow and Carlisle. Some time after the 1923 grouping scheme, Mr. Whitelegg joined Beyer, Peacock & Co. Ltd. as General Manager, retiring in 1930.

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More two-way working

AMONGST works on the Clacton line that are being undertaken in preparation for the electrification on the high frequency a.c. system that is due for completion next year, to enable the branch to be used by the E.R. as a testing ground for new equipment, is modification of Thorpe-le-Soken station, junction for the Walton-on-the-Naze branch. Here a centre track is to be equipped for two-way working, so that trains stopped in the station to divide into or connect Clacton and Walton portions can be bypassed by non-stop services in either direction. The engineering works in general are making good progress. They involve the alteration of 21 bridges, the cutting back of station awnings, alterations to the track layout of seven stations, provision of load gauges and notices at level crossings, lengthening of sidings at Colchester and Walton, and the provision of an additional siding at Clacton. The steam locomotive shed at Clacton is to be adapted as a temporary inspection and maintenance depot for electric rolling stock and alternative accommodation for steam locomotives and staff will be provided. Of the 21 bridges to be altered, 16 have to be raised to provide the necessary clearance for the overhead wiring.

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Resignalling at Perth

THE contract recently awarded by British Railways to the Siemens & General Electric Railway Signal Co. Ltd., for signalling at Perth, covers colour-light signalling and electro-pneumatic operation of points at Perth General station and beyond over some nine miles of the main line. A route-relay interlocking installation operating over 400 routes will enable the work of thirteen existing signal cabins to be centralised in a new cabin south of the station, which will control the main line from Stanley Junction to Hilton Junction, respectively north and south of Perth, and the line to Dundee as far as Barnhill, a little over a mile from the General station. Routes will be set up by operating key switches corresponding to the beginning and end of each route, and mounted in the appropriate positions on the track diagram. The main items of signalling equipment to be supplied include multi-aspect colour-light signals, electro-pneumatic point machines equipped with ground track locks and complete with air control units, position-light shunt and subsidiary signals, and a.c. vane-type track relays.

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A latter-day Brunel?

A FORMIDABLE railway of the future has been dreamed up by a Russian professor, who visualises a railway across the Himalayas from Russian Kirghistan through westernmost China and Kashmir to India laid to a gauge of 4.5 metres—or 12 ft. 4 in.! Although such a line would have to be built through extremely rugged and sparsely populated country, there would be a potentially heavy traffic for it to carry. The professor therefore envisages the use of 5,000-ton atomic-powered locomotives of 100,000 h.p. hauling wagons of 1,000 tons apiece, all of which would be feasible on the professor's super-broad gauge. The locomotives, he points out, would be ideal for the terrain, since they would need infrequent refuelling and their immense power would enable them to surmount the fierce gradients through the mountains.

Above : Class "0395" 0-6-0 No. 30566 bustles up the S.R. Bournemouth main line between Eastleigh and Shawford with the 7.5 a.m. Eastleigh-Winchester (Chesil) freight on July 10, 1956. [*L. Elsey*

Below : Class "J37" 0-6-0 No. 64563 makes heavy weather of the 1 in 80 Craiglockhart bank, on the Edinburgh Waverley Suburban Line, with a freight from Glasgow on September 6, 1956.

[*J. S. Swanson*

B.R. modernisation plans for 1957 and 1958

ANNOUNCING the programme of British Railways improvements and re-equipment to be carried out this year and forecasting some of the principal schemes likely to be started in 1958, Sir Brian Robertson, Chairman of the B.T.C., claimed in March that the pace of modernisation is rapidly increasing. Over one-third of the total sum of £1,200 millions to be spent under the Modernisation Plan is now committed to various developments already in progress or authorised. Large individual programmes of expenditure already authorised include £92 millions for electrification, £33½ millions for diesel main line and shunting locomotives, £32½ millions for diesel multiple-unit trains, and £46 millions for major works such as track widening, new junctions, and station and depot reconstruction schemes.

During 1957-8 rapid progress is expected with the programme for installing continuous brakes on all freight wagons, which has been accelerated and of which completion is now expected well within the 10 years originally envisaged. In addition to all new general merchandise wagons and 25,000 existing wagons, some 6,000 new 16-ton mineral wagons will be fitted in 1957, after which all wagons built will be fitted with continuous brakes. The 1958 programme also covers the conversion of about 80,000 existing wagons. Sir Brian observed that the choice of vacuum and not air brakes for standardisation had enabled this job to be done more quickly, and he was still convinced that their decision had been right. Other matters related to the general adoption of vacuum brakes which are now being closely studied include the development of an automatic coupler for vacuum-braked wagons; brake-maintenance and testing facilities, and the equipment of heavier wagons with roller-bearing or other improved axleboxes. Freight train schedules will be progressively accelerated as the number of brake-fitted wagons increases.

Tests have confirmed the possibility of improving the release times of vacuum brakes by streamlining the train pipe system, and the design and manufacture of prototype valves to improve the performance of the existing form of direct admission valve has been completed. A system embodying these valves will shortly be fitted to a wagon, and if successful will then be applied to a complete train for extended trial.

It is expected that in 1957-8, some £730,000 will be spent on schemes for improved wagon repair depots, already authorised at Chester, Simonside (Tyne Dock) and Townhill Junction (Fife). Schemes for York, Shildon and Port Talbot, costing in all about £800,000, and now under consideration, are also expected to be under way by the end of 1958. Some £66 millions are to be spent on new freight wagons—69,000 in 1957 and 40,000 in 1958—and containers.

A number of important schemes for new or improved marshalling yards, relief lines, and freight terminals will be launched or carried forward. A start will be made in 1957 with the construction of the flyover south of Bletchley station, at a cost of some £1,600,000; this scheme forms part of a wider plan for diverting cross-London freight traffic to routes which avoid the congested London area altogether. A new flyover is also to be provided at Rugby at a cost of £870,000. This will obviate conflicting movements at the junction immediately north of the station, which will increase with the introduction of the more intensive main line electric service between Euston, Manchester and Liverpool. This work will be started in 1958, when it is also expected to put in hand the construction of a £320,000 flyover at Euxton (between Wigan and Preston), where similar difficulties arise from conflicting movements. New connections are to be provided at Fenny Compton and Stratford-upon-Avon between the former G.W.R. and S.M.J. lines, which, in conjunction with new sidings at Honeybourne, will reduce congestion and enable traffic to be worked more economically. A new double line connection in the Edinburgh area between Craiglockhart (on the ex-L.N.E. Niddrie and Portobello-Haymarket line) and Slateford (on the ex-L.M.S. Edinburgh-Glasgow line), to cost £700,000, will be started in 1957; the new line will considerably facilitate the working of coal traffic from Lothian collieries to the west.

In 1958 it is proposed to complete four-tracking between York (Skelton) and Northallerton on the East Coast main line, by the construction of an up slow line from Pilmoor to Alne. In addition, colour-light signalling will be installed on the slow lines between Pilmoor and Thirsk. This will effect a great economy by increasing track capacity and enabling the diversion to the main line of freight trains from the Leeds-

Harrogate-Northallerton route, over a section of which double-heading is necessary.

Important projects in South Wales have recently been approved at a cost of nearly £2 millions. The capacity of the line between Pyle West Junction and Briton Ferry is nearing saturation point, and increased traffic will be arising in the near future from the operations of the National Coal Board and the Steel Company of Wales. Multiple-aspect signalling will be provided throughout the area, with two-way working through Port Talbot (General) station, which will be reconstructed. Following the National Coal Board's developments at Cynheidre, Carmarthenshire, the output of some 400 tons of coal per day in 1958 will progressively increase to 4,000 tons and substantial engineering works will be necessary on the Llanelly-Mynydd Mawr branch. Both these works will be put in hand in 1957. Work is expected to start this year on the second stage of the new marshalling yard at Port Talbot (Glam.), to cost nearly £2 millions, and the provision of additional facilities at Severn Tunnel Junction (at over £400,000) will begin next year.

A start has been made on a new goods yard to serve Crawley New Town and on modernisation of the goods depots at Lincoln, Liverpool (Spekeland Road) and Ripple Lane (Barking). At Peterborough, construction of a new goods depot north of the passenger station—an essential preliminary to rebuilding the latter—will start this year at a cost of £408,000. Sheffield (Queen's Road) goods depot is to be rebuilt to enable it to deal with sundries traffic now handled at three depots; the scheme will start this year and will cost £1¼ million, but it will produce substantial savings. A scheme has also been authorised for a new modernised goods station at Sighthill (Glasgow) at a cost of £2¼ millions, in order to enable traffic to be concentrated at two main terminals instead of three.

Altogether, some £92 millions has now been authorised for the electrification of British Railways. It is expected that the expenditure to be incurred on these electrification schemes, excluding the provision of new rolling stock, will amount to something like £7½ millions in 1957 and £11½ millions in 1958; in addition, approximately £16 millions will be spent on new electric locomotives and multiple-unit coaches—230 coaches in 1957 and 20 locomotives and 800 coaches in 1958. The B.T.C. now considers that it should be possible to complete well before 1970 most of the electrification projects included in the plan, which are well within their already reported schedules. There should thus be the capacity to undertake additional electrification

THE ELECTRIC LOCO CONTRACTS

AT the end of March the B.T.C. announced the placing of the first locomotive contracts for its 25 kV./6.6 kV. 50-cycle a.c. electrification schemes. The locomotives are intended primarily for the Crewe-Manchester and Crewe-Liverpool lines and are of two mixed traffic types—Type "A," designed to haul express passenger trains of up to 475 tons at up to 100 m.p.h., or mineral trains of up to 950 tons at 55 m.p.h.; and Type "B," capable of a maximum speed of 80 m.p.h., and able to haul mineral trains of up to 1,250 tons at 55 m.p.h.

Both types will be of 3,300 h.p. continuous rating, the difference between the two lying in their gear ratios. All will be double-ended, 80-ton locomotives of the Bo-Bo type; they will conform to the B.R. standard loading gauge and will be suitable for duties on all Regions. A wide range of standardisation is planned, including standard pantographs and circuit breakers for all makes, while the layout of the driving cabs will be identical in all the locomotives. Their external appearance will also be substantially the same. D.C. traction motors will be used, employing direct current supplied by transformers and rectifiers on the locomotives, with speed control by tap-changing. The motors will be carried on the bogie frames and will have fully-flexible drive to the wheels, instead of being axle-hung. The electrical equipments will allow for the development of full power at both 25 kV. and 6.6 kV. The possibility is being considered of using on some of the locomotives germanium-type rectifiers, to be supplied by the British Thomson-Houston Company.

The contracts have a total value of about £6 millions, and are for 60 complete locomotives and 40 sets of electric equipments, as follows:

	TYPE "A"	TYPE "B"
The British Thomson-Houston Co. Ltd.	20	5
	40*	—
The English Electric Co. Ltd.	10	5
The General Electric Co. Ltd.	5	5
Metropolitan-Vickers Electrical Co. Ltd. ...	5	5
Total	80	20

* *Sets of equipment for incorporation in locomotives erected by B.R.*

ROYAL SCOT
46239

during the later 1960's and consideration is now being given to further schemes, notably conversion of the East Coast main line north of York. The B.T.C.'s electrical experts are still confident their decision to adopt high frequency a.c. electrification was the right one; the voltage changeover, they say, is one of the easier problems facing them—the most tiresome being the insulation of the equipment while steam power is still in use.

Five diesel-electric Pullman units will be put into operation in 1958 (*see box*). Twenty-two lightweight diesel rail-buses are being ordered for delivery in 1957 and 1958, and will see experimental use in rural areas in the Eastern, London Midland, Scottish and Western Regions.

The first 50 of the 230 diesel main line locomotives now on order are expected to be delivered in 1957 and over 100 in 1958; supplementary programmes for 1958 are being considered. A further 500 diesel shunters will be added to stock in 1957-8. Incidentally, it will be noticed that the official building programme tabulated with this article confirms our forecast of last September that a new numbering system for B.R. diesels has been arranged.

More than 1,000 vehicles for use in multiple-unit diesel trains are expected to be delivered in 1957, and over 1,200 in 1958; by the end of next year, about 2,700 will be in service. Deliveries of new passenger carriages for locomotive haulage are expected to be about 1,300 in 1957 and 700 in 1958; included in this year's output are new buffet and restaurant cars in modern style.

Among passenger stations at which major improvements are already in hand are Barrow (Central), Cannon Street—where 12-car trains should be capable of accommodation by the middle of 1958—and Euston (London), Banbury, Glasgow (Central), Weymouth, and Plymouth (North Road). Other stations at which work is to be started in the next two years include Chichester, Manchester (London Road), Macclesfield (Central), Stoke, Liverpool (James Street), Birkenhead (Hamilton Square), Coventry, Sunderland, Leeds (City), Crawley, Gatwick, Port Talbot, and Bank (Waterloo and City Rly.). Schemes are also being prepared for the construction of stations to serve the new towns at Harlow and Basildon, and also on the modernisation of Parkeston Quay station. Substantial progress will be made with a new track layout and the installation of modern colour-light signalling at Manches-

Facing page : An impressive study of Pacific No. 46239 *City of Chester* climbing Shap with the "Royal Scot" on October 20, 1955. [*J. E. Wilkinson*

THE HIGH-SPEED DIESEL PULLMANS

THE Metropolitan-Cammell Carriage & Wagon Company Ltd., of Saltley, Birmingham, are to be the main contractors for the design and construction of five high-speed diesel-electric de-luxe units, which will begin service in 1958. These all-Pullman trains, on which meals will be served at all seats, will run between Manchester and St. Pancras ; between Bristol and Paddington ; and between Wolverhampton and Paddington. Two six-car trains, for first class passengers only, will be built for the Manchester-London service (on which a three-hour schedule is envisaged), while for the Western Region services three eight-car trains will be constructed with accommodation for first and second class passengers. The passenger portions of the vehicles, which will be of integral construction of steel, light alloy or both, will be of open type, with seats arranged on either side of a central gangway—two seats on one side, one on the other. "Loudaphone" telephone communication between driver and guard will be installed. All the trains will be air-conditioned and have heat and sound insulation, the passenger portion of all vehicles being fully enclosed, with double-glazed windows. Special importance is attached by British Railways to the exterior styling of the trains and to the interior decor, and to advise them on these matters Metropolitan-Cammell have appointed Mr. Jack Howe, F.R.I.B.A., F.S.I.A., as Design Consultant.

There will be two power cars in a train, each with a machinery compartment containing a North British/M.A.N. 1,000 h.p. pressure-charged "V"-type 12-cylinder engine direct-coupled to a G.E.C. single-bearing main generator with belt-driven auxiliary generator. Eight self-ventilated traction motors will be distributed through the train ; they will be fully-springborne in the bogies and will be geared to the axles through Brown-Boveri spring drives. The control system will comprise a combination of main generator field control and engine speed variation, with automatic torque control through an oil servo-regulator. A range of several engine speeds will be provided by means of three air-operated pistons acting on the engine governor through a system of interconnected levers. Auxiliary power will be provided by Rolls-Royce engines.

ter (Victoria). In conjunction with this scheme, improved station accommodation will be provided, at a later stage, at a cost of about £1 million.

Increased mileage of permanent way renewals is being included in the annual programmes, and additional provision is being made each year for deep ballasting and formation strengthening to cater for increased speeds. Annual bridge renewal programmes will be progressively enlarged to keep ahead of future requirements. Work will start in 1958 on the re-arrangement and re-alignment of the track in the Southern Region's Shortlands and Bickley areas, at a cost of £900,000, to enable speed restrictions to be eased, and on the provision of additional running lines at points on the East Coast route.

By the end of this year contracts totalling over £8 millions will have been placed for signalling installations. Among major re-signalling schemes, colour-light signalling at St. Pancras will be largely completed in 1958. The new signalling at Newcastle, involving the replacement of three signal-boxes at Central station and Manor Junction box by a single cabin, will also be completed in 1958, as will a scheme of colour-light signalling at Huddersfield. Other important signalling schemes planned are at Glasgow Central (to start 1957); Birmingham (Snow Hill), which is expected to be completed in 1959; and, in connection with the installation of multiple-aspect colour-light signalling between Paddington and Southall, the concentration of signalling at Old Oak Common in one signalbox, and similarly at Acton. Schemes are being prepared for colour-light signalling between Selby and York, Newcastle and Berwick, and between Bentley and Leeds (North Eastern Region); it is expected that work will start on these in 1958. A scheme for Centralised Train Control between Perth and Inverness is also under consideration and it is hoped to make a start on this in 1958.

BRITISH RAILWAYS LOCOMOTIVE BUILDING PROGRAMME—1957

Type	*Loco. Numbers*	*Builders*
Diesel		
Type "A" Diesel-electric	D.8000-D.8014	English Electric
,, ,, ,,	D.8200-D.8206	B.T.H.
,, ,, ,,	D.8400	N. British Loco.
Type "B" Diesel-electric	D.5500-D.5501	Brush Traction
Type "B" Diesel-hydraulic	D.6300-D.6305	N. British Loco.
Type "C" Diesel-electric	D.200-D.209	English Electric
Type "C" Diesel-hydraulic	D.600-D.604	N .British Loco.
,, ,, ,, (2000 h.p.)	D.800-D.802	Swindon
0-4-0 300 h.p. Diesel-hydraulic shunter	*To be notified later*	N. British Loco.
0-6-0 200 h.p. Diesel-mechanical shunter	11218-11229	Drewry Car Co.
,, ,, ,,	11163-11176	Hunslet
,, ,, ,,	11184-11186	Andrew Barclay
0-4-0 200 h.p. Diesel-hydraulic shunter	11708-11719	N. British Loco.
0-6-0 350 h.p. Diesel-electric shunter	D.3419-D.3428	Crewe
,, ,, ,,	D.3293-D.3297	Derby
	D.3337-D.3407	,,
,, ,, ,,	D.3332-D.3336	Darling-ton
	D.3439-D.3487	
0-6-0 200 h.p. Diesel-mechanical shunter	*To be notified later*	Swindon
Steam		
Cl. "9" 2-10-0	92119-92165	Crewe
,, ,,	92093-92096	Swindon
	92178-92192	,,
Cl. "5" 4-6-0	*73145-73154	Derby
,, ,,	73159-73171	Don-caster
Cl. "4" 4-6-0	75078-75089	Swindon
Cl. "4" 2-6-0	76079-76099	Horwich
,, ,,	76100-76114	Don-caster
Cl. "4" 2-6-4T	80151-80154	Brighton
Cl. "2" 2-6-2T	84020-84029	Darling-ton
Total of all Types	417	

* *Fitted with British Caprotti Valve Gear*

Right: Class "F5" 2-4-2T No. 67200 leaves Ongar with the 2.43 p.m. push-and-pull service to Epping on April 28, 1956. [*Philip J. Kelley*

Modernisation in the North-East

THE first of the Regional reports, which amplify the B.T.C.'s outline for 1957/8, is to hand from the North Eastern Region. On the freight side the N.E.R. is providing the necessary works facilities to enable the 1957 wagon brake fitting programme to be carried out at York, Shildon, Walkergate (Newcastle) and Springhead (Hull). Under the heading of improved freight terminal facilities and marshalling arrangements, the N.E.R. proposes to remodel and modernise the goods station at Stockton South; work is expected to start this year and when completed the new terminal will enable sundries traffic now being dealt with at Middlesbrough to be concentrated on Stockton, giving a better service. It is planned also to commence work next year on similar schemes at Hull (English Street), Newcastle (Forth), and Bradford Valley. The superstructure of the West Blyth Staiths, over which a million tons of coal are shipped annually, is also being strengthened

Right: Class "L1" 2-6-4T No. 67766 pilots Class "D20" 4-4-0 No. 62343 out of Doncaster with the 11.2 a.m. stopping train to York, on April 11, 1955. [*P. J. Lynch*

so as to make the Staiths capable of dealing with the new 24½-ton mineral wagons and diesel shunting locomotives; it is expected this work will be completed in 1958. Upwards of 400 main line freight trains work into or through York every 24 hours and general freight working will benefit greatly from the remodelling of the south end of Dringhouses Up Yard, now used exclusively for express freight trains, and to the combination of the up yards at York into one through yard, schemes which are now under consideration.

Among passenger station reconstruction, work will begin this year at Wakefield Westgate on roof renewals, which form the first stage of a scheme for improved facilities, including the lengthening of the down platform. Schemes are also under consideration for the further reconstruction in connection with town planning of Sunderland station, the remodelling of Leeds City station to take the traffic now dealt with at Leeds Central Station (see page 228), and general improvements at Huddersfield. These schemes are not yet finished, but it is hoped to make a start with them in 1958.

At the present time there are 37 diesel multiple-units in service in the North Eastern Region. By the end of 1958 it is hoped to complete the dieselisation of branch line services in County Durham and the Hull area and to have extended the diesel services now operating in the West Riding; it is also hoped by then to have dieselised the Leeds-York-Scarborough services and to have completed the dieselisation of the Middlesbrough-Newcastle and Newcastle-Carlisle services.

On the East Coast main line, Naburn Swing Bridge is to be permanently fixed, allowing the speed restriction which has been in force there for many years to be lifted completely. Further schemes permitting the relaxation of speed restrictions on the main line are being planned; for example, the realignment of the junction at Shaftholme, north of Doncaster, will eliminate the present speed restriction.

As part of a renewal programme, it is proposed to equip three miles of the Newcastle-Sunderland line with colour-light signalling controlled from a new signalbox at Pelaw; under this scheme, on which work is expected to begin this year, the Springwell signalbox will be closed.

The ABC of diesel transmission systems

by R. TOURRET

B.Sc.(Eng.), A.M.I.Mech.E., A.F.R.Ae.S., A.F.Inst.Pet.

THERE is a fundamental difference between steam power and diesel power in that a diesel engine does not develop any torque (or power) unless it is turning, whereas a steam engine does. This follows from the fact that a steam engine is an external-combustion unit, in which the production of hot gases does not take place in the cylinders of the engine — that is, in fuel which is not burned in them—whereas the diesel engine is an internal-combustion unit, in which fuel is burned in the cylinders. Thus the diesel engine must be turning over and have its pistons moving in the cylinders, before it can develop any torque.

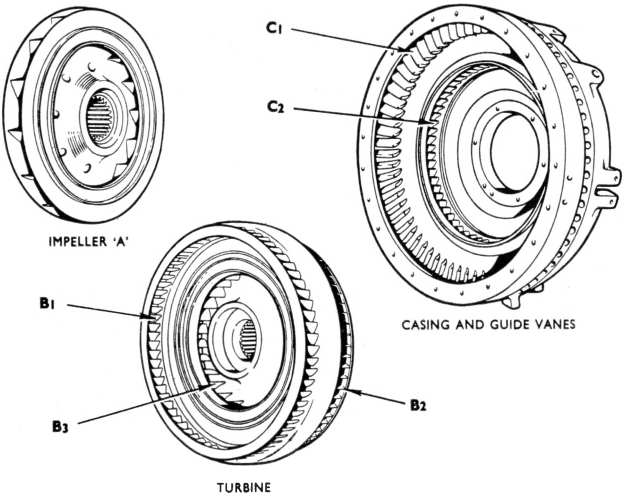
A diesel engine, therefore, must be provided with some means of starting and also of developing tractive effort when its train is stationary. The problem is very similar to that of an ordinary car, in which a clutch and a gearbox have to be provided in the drive from the engine to the wheels.

In most diesel locomotives to date, the power is transmitted from the engine(s) to the wheels via an electrical drive. The diesel engines power a generator, the current from which is used to drive electric motors coupled to the axles. This form of transmission is satisfactory in general performance and has the advantage of giving an infinitely-variable gear between the diesel engine and the driving wheels, but since generators and electric motors are required in addition to the diesel engines, it is expensive and complicated. Also the locomotive tends to be comparatively large. The first really successful diesel shunters on British railways used this type of transmission, while the main line locomotives Nos. 10000/1 and 10201-3 are also of the diesel-electric type.

Many efforts have been made to devise a simpler form of drive, preferably of a purely mechanical nature without recourse to expensive electrical equipment. However, a completely mechanical gear transmission (as in the normal car) is not practical at the moment for high power output because there are great changes in engine speed and tractive effort when gears are changed, which would result in excessive slipping, heating and wearing of the clutch. Diesel-mechanical drive is cheap, but the number of gears which can be fitted is limited and hence, when starting, the drive on a locomotive of this type proceeds in a series of steps (again like an ordinary car). For these reasons, diesel-mechanical locomotives are usually restricted to the smaller sizes up to 200 or 300 h.p. and occasionally up to 500 h.p., and usually to types of small speed-range also, such as No. 11100 and 11500 of British Railways. The most powerful

A TORQUE CONVERTOR

The three basic parts of a Rolls-Royce hydro-dynamic torque convertor are shown in this exploded view. The impeller "A," which is driven by the engine, has one ring of blades which pump the fluid with which the convertor is filled. The turbine, which is made up of three rings of blades, B1, B2 and B3, is connected to the output, or driven, shaft. The reaction, or guide vanes, are in two rings, C1 and C2, attached to the stationary casing. When the input shaft is driven, the impeller blades force the fluid outwards, striking the first ring of turbine blades, B1. The fluid, having changed direction to give initial torque to the turbine, is then re-directed by the first set of guide vanes, C1, on the housing to impinge on the second set of turbine blades, B2, adding more torque to the turbine. Similarly the fluid is re-directed by the second ring of guide vanes, C2, to the turbine blades, B3. Under operating conditions, when the output speed is approaching the maximum, the fluid passes quickly around the circuit, striking each blade at only a small angle to the normal. As the load on the output shaft increases, the turbine slows down, the striking angle is increased and the output torque rises.



diesel-mechanical locomotive yet built is the 2,000 h.p. Fell locomotive No. 10100. This has four 500 h.p. diesel engines coupled to a common gearbox, from which the drive is taken to the two inner driving axles. The Fell locomotive is an extremely ingenious design but, while reasonably successful, it is very complicated and employs a multitude of gears and couplings.

The third type of transmission, the diesel-hydraulic, has made rapid progress over the last few years and is coming into general use on both locomotives and cars. Diesel-hydraulic drive has an efficiency approaching that of electric drive, gives practically an infinitely-variable gear between the diesel engine and the driving wheels, yet avoids cumbersome and expensive electrical gear. Since less is generally known of hydraulic transmissions, a slightly more detailed description is warranted.

A hydraulic coupling can be used in conjunction with a mechanical gearbox, in effect replacing the clutch, but this does not normally have the advantages listed in the previous paragraph. A complete hydraulic transmission consists of a torque convertor, followed by one or more hydraulic couplings. The torque convertor is basically a centrifugal pump and a hydraulic turbine. This accepts an input torque at a given (engine) speed and converts it to higher torque at lower speeds. The torque multiplication is determined by the design of the unit, but is usually about six or seven, and is highest when the output speed is zero—that is, when the locomotive is stationary; as the output speed increases, so the output torque falls automatically. This characteristic is exactly what is required in railway service, of course, in that it provides maximum tractive effort when starting. Within its designed range of operation, a hydraulic convertor rapidly and automatically balances the speed of the load to meet the resistance offered to moving that load; at the same time, it allows the diesel engine to develop its full power.

A hydraulic coupling consists of two similar rotating members, each with straight radial vanes. In contrast to the convertor, the input and output torques of a coupling are always equal and there is no torque multiplication. The hydraulic coupling takes over from the convertor at the high-speed end of the speed range of the locomotive. In the convertor range, the engine speed and horse-power are sensibly constant, but in the coupling range the speed and power vary as with a mechanical gearbox. Powers up to at least 1,000 h.p. can be handled by hydraulic means now, and two or three convertors may be incorporated in the locomotive to cover the speed range as efficiently as possible. Changeover from one to another and to the top-speed coupling is performed automatically by filling and emptying the appropriate fluid circuits.

The South Devon banks

by CECIL J. ALLEN
M.Inst.T., A.I.Loco.E.

IN the annals of British locomotive performance there are not a few feats of speed that are never likely to be surpassed in future ; and it is very unlikely that they will be equalled either. The chief reason is that with the lighter locomotives and stock of earlier years liberties were taken in the matter of speed over curved track that would never be attempted or even dreamed of today.

Nowadays speed restrictions imposed by civil engineering departments at times appear to go to the other extreme, and any liberties taken with them that reach the ears of the civil engineering authorities generally mean a visit to the "carpet" by the offending driver. Nevertheless it is better to be safe than sorry (assuming, of course, that you still remain alive to exhibit the necessary penitence), and excessive speed round curves is also uneconomic because it tends to increase track maintenance costs.

On the other hand, it is difficult to know how drivers can be expected to observe speed restrictions with precision unless they are provided with accurate and reliable speedometers ; also in these days when there are innumerable speed restrictions in the higher ranges of speed—50, 60, and even 70 m.p.h. and more—how drivers can be sure of keeping them all in mind is another problem. The cut-out figures at the lineside, first introduced on the old North Eastern Railway and now to be standard practice, are a help, of course, though of no use in the dark hours. But how much better is the Continental system, in which a glass-fronted case is provided in the cab to house the appropriate page of the working timetable, with all the times of the train concerned, *plus* all the regular speed restrictions, constantly under the driver's eye.

Now all this is a preliminary to a talk about the exceedingly difficult stretch of the Western Region main line along the southern slopes of Dartmoor between Newton Abbot and Plymouth—the only main line in Britain which can boast a short stretch of gradient as steep as 1 in 36. To many of us it has always seemed a mystery that Plymouth should have been chosen as the engine-changing point for trains from London and the North to Cornwall rather than Newton Abbot, for the nature of the power demand on the locomotives west of Newton differs radically from what is needed east of that point. From Paddington to Newton, apart from the 2½ miles at 1 in 80-90 up to Whiteball tunnel—or, in the reverse direction, the corresponding climb from Bruton to Brewham—there is barely a gradient worth mention, and it is all pretty hard steaming at speed. But what a total change west of Newton ! One would have thought that from here westwards, and throughout to Penzance, a small-wheeled class with high tractive effort for hill climbing and rapid acceleration from service slacks would have been an asset to the working, as diesel power most certainly will be when it arrives.

After a train has cleared Aller Junction, there lies ahead the tremendous "gable" of Dainton, beginning with just over ½-mile at 1 in 98, and then 1¾ miles almost entirely at between 1 in 57 and 1 in 36 and with 1¼ miles averaging 1 in 45. The short tunnel just at the crest, with its slip-encouraging tendencies, is not particularly helpful. The first mile down the western approach is even steeper, with an average inclination of 1 in 40 and a maximum of 1 in 37 ; then comes a mile of gradual flattening out to 1 in 100 before the first level strip is reached. The extremely sharp curvature down much of this descent, which has to be seen from the footplate to be believed, and for which the gradients are not compensated, adds to the task of the engines of eastbound trains by increasing flange friction, and enforces a continuous speed restriction to 40 m.p.h. on the engines of westbound trains.

From Totnes comes another very exacting climb, less steep but much longer than those to Dainton ; it begins with a mile at 1 in 70, then follow 1¾ miles averaging about 1 in 50 to Tigley box, and from there 1½ miles at about 1 in 90 to Rattery box, followed by a relatively gentle rise to the summit at Wrangaton. A similar gentle descent ensues to Hemerdon box, and finally, like dropping down the wall of a house, comes the renowned Hemerdon bank, 2¼ miles straight off at an average of 1 in 42.

Unlike the approaches to Dainton, Hemerdon bank is comparatively straight, and top speeds up to 75 m.p.h. in descending it are not unknown ; but eastbound expresses, which one might have thought could get a run at it because of the sharp 1 in 80 from Mutley down to Laira, are now prevented from doing so by the apparently permanent speed restriction to

35 m.p.h. over the Plym bridge at Marsh Mills. With the most vigorous acceleration from this, it is difficult for any eastbound train to hit the foot of Hemerdon bank at anything much over 50 m.p.h. Hemerdon also has a sinister reputation in the autumn, when the leaves from the trees fringing the line deposit themselves on the rails and make them greasy, though fortunately this period is relatively short. In addition to Hemerdon eastbound, none of the other three climbs can be begun at more than 50 m.p.h. because of the 50 m.p.h. restriction through Totnes station, and that of 40 m.p.h. through Aller Junction.

We come now, in Table I, to two historic runs over this course which were of the type described in my first paragraph. It is quite obvious, as we look at their details, that no such restrictions as those just mentioned could possibly have been observed on either of them. The up run is part of the famous exploit of 4-4-0 No. 3440 *City of Truro*, with a Plymouth-Paddington mail train on May 9, 1904, which eventually put that locomotive into the York Railway Museum. The down run, with No. 3433 *City of Bath*, of the same class, even though its speeds were not quite so high, was in its way even more astonishing, seeing that three Royal saloons carrying the then Prince and Princess of Wales (later King George V and Queen Mary) formed three-fifths of the five-coach train. Never before nor since have such liberties been taken with any other Royal train, and it is still an unexplained mystery why, to the consternation of the official Plymouth party which was to welcome the Royal party at North Road station, the flyer put in an appearance 37 min. ahead of time, Driver Burden having covered the 245.6 miles from Paddington *via Bristol* in 233 min. 35 sec. ! But our concern on both runs is with what happened between Newton Abbot and Plymouth.

As to the up journey, it still seems almost completely unbelievable that Driver Clements, with his 51-ton *City of Truro* and five heavily-loaded mail-vans of 148 tons gross weight, could have run the 31.9 miles from North Road, Plymouth, passed slowly after climbing out of Millbay, to Newton Abbot in 33 min. 35 sec. Unfortunately, Charles Rous-Marten, who timed the run, left no details of the speeds over this stretch, but they must have been astonishing. First of all, an average of 54.5 m.p.h. from North Road to Plympton shows that something well over 60 m.p.h. must have been attained past Laira, but even so the average of 40.2 m.p.h. from Plympton up the 1 in 42 to Hemerdon takes one's breath away. Then followed an average of 68.7 m.p.h. from Wrangaton down to Totnes, over a stretch which now has a "ceiling" of 60 m.p.h., with a further limitation to 50 over 4¾ miles in all of the distance.

Next came the average of 57.5 m.p.h. from Totnes up to Dainton, which must have meant a pretty high speed through Totnes and up all the lower and easier part of the bank, 3¾ miles of which is now under a 40 m.p.h. limitation ; equally, the 58.1 m.p.h. average from Dainton down to Newton Abbot was over a stretch where the present limit for 2¾ miles is 45-50 m.p.h. Thus it was that Clements achieved his all-time record—as assuredly it must be—of just over 33½ min. as compared with the present fastest start-to-stop time of 45 min. (the up "Cornish Riviera"), or 51 min. or more by most of the other up expresses.

In the opposite direction Burden's 37¾ min. with a lighter load of 130 tons was not quite so exciting, but this came at the end of a run during which the engine had averaged 71.8 m.p.h. for 101.2 miles from Ealing Broadway to Bath, and 69.8 m.p.h. for just over 157 miles, from Ealing to Taunton, the latter including both Bath and the extremely severe Bristol slacks, and had topped Whiteball summit at 50 m.p.h. In this log some speeds west of Newton Abbot were included ; we know, for example, that Dainton summit was cleared at 30 m.p.h., and that the lowest speed up Rattery bank was 36, after which there was so excellent a recovery that the minimum over Wrangaton summit was 51½ m.p.h.

In view of his Royal freight, it may be taken as certain that Burden exercised slightly more restraint round curves than Clements ; even so, the average of 55.5 m.p.h. from Dainton down to Totnes can hardly escape notice, nor that of almost exactly 60 from Wrangaton down to Plympton ; and 51.2 m.p.h. from Plympton to the dead stand at North Road must have involved some fairly lively proceedings also. In this case, an actual time of 37¾ min. in 1903 compares with one fastest pass-to-stop schedule of 47 min. today, and several others of 50 min. inclusive of 3 min. "recovery time."

We come now to more modern times.

TABLE I
G.W.R. NEWTON ABBOT—PLYMOUTH

Dist.	*Engine: 4-4-0 No.* ...	†3440	*Dist.*	‡3433
	Load: Coaches ...	5		4
	Load: tons gross ...	148		130
miles		*m. s.*	*miles*	*m. s.*
0.0	PLYMOUTH (N.RD.)	* 0 00	31.9	37 44
4.0	Plympton	4 24	27.9	33 03
6.7	*Hemerdon*	8 47	25.2	30 34
10.8	Ivybridge	13 22	21.1	26 20
14.1	Wrangaton	16 39	17.8	22 54
16.3	Brent...	18 34	15.6	20 21
23.1	Totnes	24 30	8.8	10 55
28.0	*Dainton*	29 31	3.9	5 37
31.9	NEWTON ABBOT...	*33 33	0.0	* 0 00

* Passing time. † *City of Truro.* ‡ *City of Bath.*

Here the interest in what has happened on these South Devon inclines is heightened by the considerable variety of engines that has worked over them in recent years.

Table II shows three climbs by Southern "West Country" Pacifics with seven-coach loads from a standing start at Totnes to Dainton summit, the first timed by Lieut. W. J. Alcock, R.N., and the other two by Mr. D. A. Bosomworth. The maximum speeds —61 m.p.h. by *Yes Tor* on the first run and 60 by *Chard* on the third—were attained on the ½-mile level strip from milepost 220¼ to milepost 219¾, and at the beginning of the steepest mile, at 1 in 43-37, the speed on these two runs had not fallen below 51 m.p.h., the drivers taking a slightly liberal view of the 40 m.p.h. speed restriction along this length. The corresponding speeds of *Torrington*, on the middle run, were 50 and 45 m.p.h. Finally, Dainton summit was breasted at speeds of 38, 40 and 42 m.p.h., these being the fastest climbs to Dainton eastbound of which I have seen any records in modern times.

Lieut. Alcock also included details of an outstanding climb by *Yes Tor* with a similar 7-coach load of 225 tons from Plympton to Hemerdon, also from a standing start. Up the 1 in 41-42 the 4-6-2 gradually accelerated to 19½ m.p.h. in the first ½-mile, then, up successive ½-miles, to 22, 23½, 23½, and 24¼ m.p.h., with times to these points of 1 min. 52 sec., 3 min. 19 sec., 4 min. 39 sec., 5 min. 54 sec., and 7 min. 9 sec., and of 7 min. 38 sec. for the distance of 2.7 miles to Hemerdon box. This, again, is as good a climb of Hemerdon bank as I have ever known. The maximum tare load a "West Country" 4-6-2 is permitted to take over this section is 288 tons.

TABLE II
W.R. TOTNES—DAINTON

Dist.	*Engine: S.R. 4-6-2, No.* ...	34026		34031		34033	
	Load: tons tare ...	211		213		213	
	Load: tons gross ...	220		225		225	
miles		*m. s.*	*m.p.h.*	*m. s.*	*m.p.h.*	*m. s.*	*m.p.h.*
0.0	TOTNES ...	0 00	—	0 00	—	0 00	—
1.9	*Milepost* 221 ...	3 24	53	3 18	44	3 09	53
2.9	,, 220 ...	4 32	57/61	4 38	47½/50	4 15	56/60
3.9	,, 219 ...	5 35	51	5 48	45	5 17	51
4.9	,, 218 (*Dainton*) ...	6 56	38	7 11	40	6 35	42

Table III I have designed to show the work of as wide a variety of engines as space permits on the westbound run from Newton Abbot to North Road, Plymouth. On eight of the runs the trains were passing Newton Abbot ; the remaining four were start-to-stop, but for comparative purposes I have calculated the net times of the latter as though they were pass to stop. With gradients of such severity a single coach more or less will affect the climbing speeds considerably. Locomotive handling of the most expert description also is a *sine qua non* ; an increase of cut-off delayed by, perhaps, no more than half-a-mile, may make all the difference between a successful climb and something not far removed from stalling. Given a reasonably full boiler and a good head of steam, however, none of these climbs is long enough to give anxiety about water level or pressure ; the prime consideration is simply to keep moving.

	No. of Run ...
	Engine: No. ...
	Engine: Type ...
Dist.	*Railway or Region*
	Engine: Class ...
	Load (tons tare)
	Load (tons gross)
miles	
0.0	NEWTON ABBOT ...
3.9	*Dainton* ... ...
8.8	Totnes ... ...
11.4	*Tigley* ... ...
13.3	*Rattery* ... ...
15.6	Brent ... ...
17.8	Wrangaton ...
21.1	Ivybridge ...
25.2	*Hemerdon* ...
27.9	Plympton ...
31.9	PLYMOUTH (N. RD.) ...
31.9	Net times (min.) ...
	Speeds (m.p.h.) at :
	Newton Abbot ...
	Milepost 216 ...
	Dainton Summit ...
	Tigley ... ...
	Rattery ... ...
	Wrangaton ... ...

The table begins with the Swiss-built Brown Boveri gas-turbine-electric locomotive No. 18000, on the 3.30 p.m. from Paddington to Plymouth, and, unfortunately, with a very light load of six coaches only. The engine was held under restraint to 40 m.p.h. until we were clear of Aller Junction, and then opened out, which produced a lightning acceleration to exactly 60 m.p.h. in the next ¾-mile, and took us over Dainton summit at 41 m.p.h. ; the 2.8 miles from Aller Junction to milepost 218 were run in 3 min. 22 sec., at an average of all but 50 m.p.h. The time of 6 min. 10 sec. for the 4.5 miles from Totnes up to Rattery also was by far the fastest in the table, with its average of 43.8 m.p.h. Despite the more cautious descent from Dainton to Totnes, No. 18000 with 215 tons was faster from Newton Abbot to Brent than the historic performance of *City of Bath* with 130 tons in Table I. All the downhill stretches with the gas-turbine-electric were taken at a very moderate speed, but even so the net time of 39¾ min. from Newton to Plymouth was 10¼ min. less than the 50 min. allowed. I have no record of the work of the British-built counterpart, No. 18100.

The run of "Castle" 4-6-0 No. 5085

TABLE III. W.R. NEWTON ABBOT—PLYMOUTH

1	2	3	4	5	6	7	8	9	10	11	12
18000	5085	4003	6005	4079	46162	4474	4074	6017	60033	46236	‡6012
A1A-A1A	4-6-0	4-6-0	4-6-0	4-6-0	4-6-0	4-6-2	4-6-0	4-6-0	4-6-2	4-6-2	4-6-0
W.R. G.T.E.	W.R. "Castle"	G.W.R. "Star"	W.R. "King"	G.W.R. "Castle"	L.M.R. "Royal Scot"	L.N.E.R. ¶"A1"	G.W.R. "Castle"	W.R. †"King"	E.R. "A4"	L.M.R. "Duchess"	W.R. "King"
201	241	249	253	255	281	292	292	327	328	329	450
215	255	260	270	275	305	310	310	350	350	350	495
m. s.	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*	*m. s.*
* 0 00	* 0 00	* 0 00	* 0 00	* 0 00	0 00	* 0 00	* 0 00	* 0 00	0 00	0 00	0 00
						p.w.s.	*p.w.s.*				
4 56	5 02	6 00	6 05	5 55	7 54	7 15	7 15	5 20	8 24	7 22	8 30
10 45	11 30	11 20	11 25	11 25	14 29	13 10	12 35	11 32	15 19	14 25	14 50
14 28	15 50	15 05	15 35	15 20	19 04	17 35	16 30	15 57	20 19	18 40	19 48
16 55	19 02	18 05	18 40	18 50	22 48	20 50	20 00	19 22	23 57	21 55	23 59
19 51	22 02	21 10	21 25	22 10	26 10	23 50	23 03	22 32	27 15	25 05	27 24
											sigs
22 37	24 30	23 40	23 55	24 55	29 36	26 05	25 15	25 17	30 08	27 59	30 38
											sig. stop
26 34	27 55	27 00	27 35	28 35	33 47	29 55	28 45	28 56	34 18	31 54	37 15
31 22	32 30	31 10	31 40	33 10	38 26	34 15	32 45	33 16	39 32	37 28	41 41
34 09	35 40	33 40	34 25	36 05	40 46	37 05	35 16	36 07	42 49	39 59	44 17
sigs	*p.w.s.*	*sigs*		*p.w.s.*	*p.w.s.*	*p.w.s.*	*p.w.s.*	*p.w.s.*	*p.w.s.*	*p.w.s.*	*p.w.s.*
44 17	42 20	42 30	39 10	43 30	49 20	43 30	41 33	42 05	52 44	50 04	50 27
39¾	41¼	39¼	39¼	41¾	§ 45	41½	39¾	41½	§ 47	§ 44¼	§ 45¾
35	—	35	30	33	0	25	—	44	0	0	—
60	—	—	49	50	48	44½	—	60	45½	51	—
41	—	30½	27½	24½	20	24½	—	24	19	27	18
39½	—	32½	28½	27	23	27½	—	27	25	31½	24½
49½	—	37	43½	33	36	40	—	38	32	37	31½
43	—	52½	49	50	47½	49½	—	—	47	47½	—

* Passing time. † Double chimney. ‡ Piloted by 4-4-0 No. 3401. § Calculated on pass-to-stop basis. ¶ Original "A1" Series.

Evesham Abbey, in Column 2, was timed by Mr. C. W. Herbert, and his log unfortunately gave no details of the speeds at any point. But the outstanding fact is that the "Castle," with 255 tons of train, tied precisely with No. 18000 in the time of 3 min. 22 sec. from Aller Junction to Dainton, and thus made one of the fastest climbs of this famous bank with steam of which I have ever seen a record. But nothing further of any note was done. This was on the same train as Run No. 1, and *Evesham Abbey* ran the 52.0 miles from Exeter to Plymouth in 66 min., instead of the 75 min. scheduled.

No. 3 is the only "Star" performance in the table, and it formed part of a run which was in every respect a star turn. It was the first journey I ever made personally on the "Cornish Riviera Express," in the year 1921, and one which I am never likely to forget, for that Old Oak celebrity of those years, Driver William Springthorpe, between Westbury and Plymouth picked up no less than 16 min. of time that had been lost earlier by permanent way delays. So the grand running here tabulated came at the end of four hours of very hard steaming. With 260 tons of train, *Lode Star* went over Dainton summit at a higher speed—30½ m.p.h.—than any other engine in the table except No. 18000 (and, possibly, No. 5085 also), and the same applied to the climb from Totnes to Rattery. So the schedule of 44 min. then operative from Newton to Plymouth was cut to 42 min. 20 sec., or 39¼ min. net.

The run of *King George II* in Column 4 was one made in 1927 when I was on the footplate, with Driver Rowse and Fireman Osborne, and a load of 525 tons out of Paddington, 450 tons from Westbury, 380 tons from Taunton, and 270 tons from Exeter. We had passed Westbury 6 min. late, because of permanent way checks, but had just pulled back to time by Newton—193.9 miles in 198 min. 40 sec., or just over 192 min. net. The 27½ m.p.h. minimum at Dainton was achieved with a cut-off lengthened progressively from 20 to 35 per cent, and, of course, full regulator ; and the same cut-off gave us 28½ m.p.h. at Tigley and 43½ at Rattery, and, up the easier grades through Marley tunnel, 60 by Brent. At that time we had the luxury of no permanent way restrictions round Tavistock Junction, and so made the most unusual time of 4¾ min. over the final 4.0 miles from Plympton up into North Road. The Newton-Plymouth allowance at that time was 41½ min. only, so our 39 min.

10 sec. showed no greater gain than 2¼ min. But it brought us into Plymouth in 237 min. 50 sec., or 233½ min. net, from Paddington. In calculating the net times of the other runs, I have allowed 5½ min. from Plympton to North Road stop, in view of the cautious running from Mutley to the stop that is now the invariable practice.

Run No. 5 was the end of another footplate journey of mine on the "Limited," and with another famous combination of driver and engine—William Young, of Old Oak, with his fireman, Chellingworth, and *Pendennis Castle*. As with *King George II*, we had brought 530 tons out of Paddington, and 455, 385 and 275 tons over the successive stages after release of the slip portions, halving the load from the initial fourteen to the final seven coaches. This was in 1924, when the train was allowed 247 min. to Plymouth, and we had passed Newton 2½ min. early, in 200½ min. from London, so that there was no hurry. It is interesting that *Pendennis Castle* needed 42 per cent cut-off to get over Dainton at 24½ m.p.h., as compared with *King George II's* 35 per cent for 27½ m.p.h. With a maximum up Rattery bank of 33 per cent, as compared with the King's 35 per cent, *Pendennis*, passing Totnes at nearly 60 m.p.h., fell to 27 m.p.h. at Tigley and recovered only to 33 by Rattery, whereas the bigger engine's figures were 55, 28½ and 43½ m.p.h. respectively. However, despite a concluding check, *Pendennis* was into North Road 3 min. early, in 244 min. from London and 43 min. 30 sec., or 41¾ min. net, from Newton Abbot.

One of the strangers appears in Column 6, the L.M.R. 4-6-0 No. 46162 *Queen's Westminster Rifleman* ; this was, of course, during the 1948 locomotive exchange. In neither direction was the "Royal Scot" seen at its best between Newton and Plymouth ; on this run the maximum cut-off on the climbs to both Dainton and Rattery was not allowed to exceed 30 per cent, and although the main port of the regulator was in use, it was not fully open, hence the relatively low minima of 20 and 23 m.p.h. on the two climbs. Two days earlier the same engine did slightly better, with a time of 7 min. 23 sec. to Dainton (25½ m.p.h.) and 14 min. exactly to Totnes ; speed had not fallen below 29 m.p.h. when Tigley distant was seen to be at caution, and heralded some bad signal checks from a laggard freight ahead. But the net times on the two runs, 45 min. each, were well within the 50 min. allowance.

No. 7 was a historic journey, for it carries us back to the 1925 locomotive exchange, and sets out the work of the Gresley Pacific *Victor Wild* in days well before the emergence of the first "A3" 4-6-2 with modified valve-setting and 220 lb. pressure. Driver Pibworth and Fireman Birkwood had nothing at all to be ashamed of in this performance over a difficult road, of which they had had no more than a week's experience. The drop in speed from Aller Junction to Dainton was less than on any run other than that of No. 18000 with only two-thirds of the load, and was the more notable in that we had been slowed to 10 m.p.h. for a bridge repair just before Newton Abbot, and had had a further slowing to 30 over Aller Junction. The 27½ m.p.h. at Tigley and the substantial recovery from there to 40 at Rattery and 54 through Brent evidenced some excellent work. So Plymouth was reached in 41½ min. net.

In the next column are seen the times of the tail-end of Edward Rowe's astonishing run with *Caldicot Castle* on the last day of the 1925 exchange, when he ran from Paddington to Plymouth in 231 min. 58 sec., or 230¼ min. net. Unfortunately no records remain of the speeds of No. 4074 west of Newton ; it is clear that a higher speed was run by the 4-6-0 down from Dainton to and through Totnes, but the 4-6-2 was certainly doing the better work of the two up to Rattery. The net time of *Caldicot Castle* was 39¾ min., against the 44 min. from Newton to Plymouth then allowed.

We come now to loads nearer the maximum tare of 360 tons that a "King" is permitted to work over this section (for a Class "7" engine, such as a "Castle" or "County," the limit is 315 tons), and Column 9 shows the work of a modified "King," with double chimney. This was timed by Mr. J. A. Crittenden on the "Limited," and *King Henry IV* had done extremely well, after passing Bedwyn 14½ min. late, owing to a dead stand for signals at Midgham, to have cut the loss to 2 min. by Newton Abbot, with 390 tons from Paddington to Heywood Rd. and 350 tons from there onwards. While the climbs of Dainton and Rattery banks were not outstanding, they were good enough to recover the remaining 2 min.

Runs Nos. 10 and 11 belong to the 1948 exchange, the former with the E.R. double-chimney "A4" Pacific *Seagull* and the latter with the L.M.R. "Duchess" Pacific *City of Bradford*. The "A4" was not seen at her very best here ; going up Dainton, 35 per cent cut-off and full regulator resulted in a minimum of 19 m.p.h., whereas the "Duchess," with 30 per cent cut-off and the main regulator half open, went over at 27 m.p.h. Up to Rattery *Seagull* was worked at a maximum of 35 per cent with full regulator and the "Duchess" at the same figure with half regulator ; the respective minimum speeds were 25 and 31½ m.p.h. at Tigley and 32 and 37 m.p.h.

(*Concluded on page* 251)

My memories of the North Eastern Atlantics

by "TORAM BEG"

PRIOR to the grouping of the railways, I used to look with admiration at the magnificent enamelled green North Eastern Atlantics which occupied part of the North British shed at Haymarket. In those days the N.E. engines were as remote from me as if they were at the North Pole instead of in an adjoining road. I never dreamed that some day I'd drive them. But I did, and my admiration rather took a jolt — or, should I say, "got a shake." I felt that here was an exceptionally good engine spoiled (so far as I was personally concerned), for three reasons :

(1) They were difficult engines to prepare and stable.
(2) They had the driving controls on the right side (which is, of course, the wrong side).
(3) They were not nearly as strong on the banks as an engine of that type should be.

I drove them for years, and while admittedly they were commencing to show that deterioration which set in with the cult of the "common user" engine, they were still in good enough trim to work top class express trains. So far as I can remember the numbers of the Haymarket "Zs" were 714, 2193, and 2194, and we spare men fell heir to them, when they were replaced by the Gresley Pacifics on the regular trains.

Now don't imagine that the link of senior spare men (of which I was one at that time) didn't do a great deal of running. For weeks on end I handled the N.E. Atlantics on both fast passengers and the more difficult fish and meat trains on the East Coast Route. Because I was "spare" I believe I got a more thorough acquaintance with them than the regular train drivers, so I can speak from experience on the three points of criticism I have made ; for not only had I to drive the engines, but to prepare and stable them as well, whereas nine times out of ten the regular train men merely "stepped on and off" and had the menial duties done for them by the less exalted.

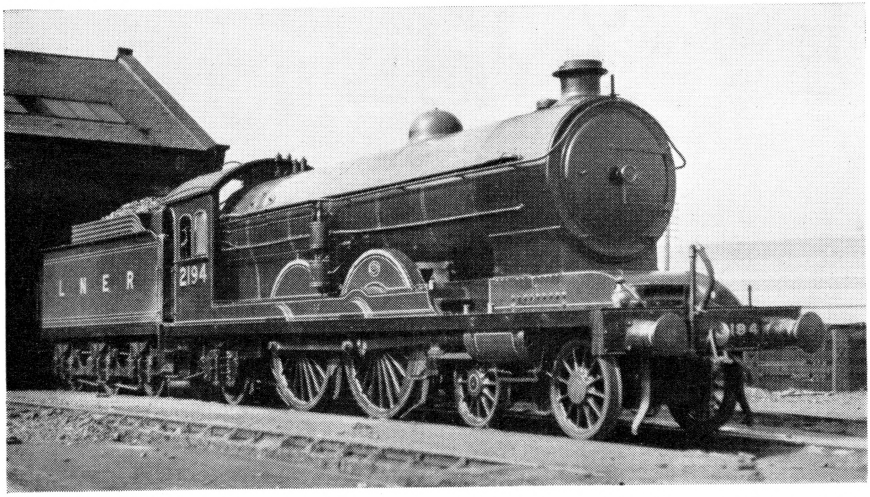
To prepare those three-cylinder N.E. Atlantics on a cold freezing morning or night (and it was mostly cold, freezing, and dark when I performed the hateful job) was in my opinion the sort of punishment they should have reserved for the baser sort of criminal offenders. The number of worsted trimmings I had to take out of the oil boxes, then dry them and clean out the water which usually filled them instead of oil, was merely the prelude to a contortionist act in the "guts" of the motion.

Here, squeezed between the narrow confines of the frames were no fewer than six eccentric straps, rods, and the "what-have-you" of the Stephenson's valve gear; along with those was a connecting rod and big-end. The eccentric straps had two oil covers, each oil hole of which was plugged with a cork, usually pushed down below the level of the cover. Those had to be prised out (very often in tiny bits) and renewed (I never once went below a "Z" to oil her without carrying a pocketful of corks).

In those days I could quite correctly be described as "skinny" and I used to wonder how my mates of Falstaffian proportions managed to squeeze themselves between the side of the framing and that galaxy of eccentric rods. There was an alternative of going between the back of the straps or centre big-end, but if any movement were accidentally to take place when you were in that position you would have been squashed like a fly up against the firebox. So I became a contortionist and played safe.

To stable an N.E. Atlantic took about three times as long as with any other engine I know, mostly because the cab showed every indication of a designer with money to burn. The N.E. cabs were so well furnished that there wasn't room to do the chores; compared with an N.B. engine they were like a fabulous palace alongside a croft in the Outer Hebrides. The fireboxes were very long, and so the fire-irons were in proportion. To clean the fire you had to wangle yards and yards of heavy iron shovel between huge iron plates like blinkers jutting out from either side of the small fire-door.

Then, once you managed to pull a mere speck out of the magnitude of dirt which was in the firebox, there was the problem of trying to throw it out of the cab door. It sounds simple—but wait. The front of the shovel had to be negotiated between two high built-up footstools, while the handle normally was in contest with two huge roof-high steel boxes on the tender. Those boxes might have made reasonable kennels for mastiff dogs, but they were definitely out of place on the tender of a locomotive whose fire required cleaning at least twice every twenty-four hours. Incidentally one of the boxes normally carried enough huge



★ One of Haymarket shed's "Z" 4-4-2s, No. 2194, photographed at Edinburgh in 1932. [P. Ransome-Wallis

spanners to dismantle the engine's largest parts, while the oil cans and oilers wouldn't have disgraced the engine room of the *Queen Mary*. The other box was supposed to be for the food-boxes and coats of the enginemen; differently shaped they could have held my entire wardrobe.

What usually happened when one attempted to clean the fire was that through sheer frustration, to say nothing of exhaustion, the "slave of the shovel" just dropped the stuff on the cab floor, and shovelled it on the ground with the firing shovel. I didn't like this at all, although I never had to do the fire-cleaning. When I did do this job in my young days I was brought up to clean the fire so that not even the dust was visible in the cab when the job was done.

As to my third criticism, to me the wrongness of the right-hand drive on a railway locomotive is summed up in the fact that all (or almost all) emergency signals which the driver has to see take place on the left-hand side of the track on which he is running, and it's the abnormal I'm watching for in high speed running. One knows and can cater for normality in signals and so on from any side of the cab, but that's not a sufficiently good reason for putting yards of boiler as a blind spot to the line of vision in a situation which calls for quick emergency action.

Up to now my remarks have concerned the "Z" type of N.E. Atlantic. I also had experience of the two-cylinder type, and while the latter was a much simpler job to oil, it had all the rest of the awkwardnesses of preparation and disposal. It was a much stronger engine on the banks, but could burn a lot more coal than the "Z". Incidentally, in those days the coal with which the North Eastern engines were supplied was far superior to the N.B. stuff, which may account in part for the fact that the N.B. Atlantics were far higher in coal consumption than their N.E. counterparts.

Mention of the N.B. Atlantics brings me to a point which I must make clear. In these articles I'm concerned with an engineman's reactions—nothing more or less, and in criticising or commending this or that it is essential to realise that performance in speed, strength, or many other of the departments which are so attractive to those who do not actually live with railway engines, are only a part of the value of a locomotive from a driver's point of view. So far as the N.E. Atlantics are concerned, my point of view was necessarily a comparison with another type of locomotive I had been used to, the North British 4-4-2s. And let me also make it clear that I have always considered the North British Atlantic on the road one of the most diabolical engines I've ever driven. But that's another story to come.

As I've said, the fire cleaning on an N.E. Atlantic was something to think about. The N.B. Atlantic, with its drop grate, made this job the easiest thing imaginable. You never needed a fire-cleaning shovel; a long "cleek" was pushed through the fire door, and in spite of the near-full box of dirt from the much inferior Scottish coal, you could clean the fire in minutes almost, compared to the hours of work on an N.E. 4-4-2. Indeed, I can recall one case where it took the best part of a shift to stable two N.E. Atlantics during a spell I put in as temporary foreman at Haymarket.

On the North British Atlantic the reversing lever was manually operated, and with their piston valves this was no great hardship (you could notch them up with the regulator wide open with one hand). On the North Eastern type this job was supposed to be done for you by a steam reverser, but like most of the steam reversers of which I have had experience, the N.E. version never stayed put where you wanted the cut-off. Not only that, but to notch them up at all was quite often a matter of luck rather than good judgment.

I don't need to enlarge on the importance of a good look-out to the driver of express trains. The front window is an important thing to him. So it was an annoyance of no mean order to find that to clean that window on the "Z" or the "V" was extremely difficult: firstly, because the front window was so far away from the driving seat (there was a yard or so of boiler end protruding into the cab of the N.E. Atlantics); and secondly, because of the way it was fastened. With the warping inevitable in such fitments the window was generally so jammed that it would have taken a hammer and chisel to dislodge it, if the space in which you did the job allowed enough freedom of movement to use a hammer and chisel.

All I needed to do on the N.B. type was stretch out my hand, turn a catch and let the wind open the front window for easy cleaning—almost without leaving my seat.

In fairness to the N.E. Atlantics I must also list a few of the " points of credit ":

(1) They were my first experience of a locomotive which could not only run faster than anything I had handled before, but ride so well that high speed was something to enjoy, not to fight shy of;

(2) They were by far the easiest engines on coal and water I had so far met;

(3) Their braking system was superb (as was that of all the former N.E. engines);

(4) All of the controls were ideally positioned for easy manipulation;

(5) When running easily with a small regulator opening the chimney design was such that there was no trouble from steam obscuring the driver's line of vision;

(6) In certain items of design they were well in advance of their time, as they were fitted with a signal warning device (even if it was unworkable through neglect when I drove them), and they also had an exhaust injector, which was a nuisance at times, although again this was mainly due to lack of maintenance.

The first time I drove an N.E. Atlantic was on one of the regular Edinburgh-London night trains, "The Night Scotsman," if I remember rightly. For some reason or other the load was too heavy for a Pacific and two trains were run, each with loads within the capacity of a "Z."

I liked the "feel" of No. 714 right from the start. Although I was on the right hand side I wasn't really unhappy about it, and enjoyed the comfort of sitting on a far broader seat than I had ever been used to; what was more important, I did not need to rise from my seat to work the throttle. The "ram's horn" type of throttle handle was not only easy to reach while sitting, but it was easy to work, which is more than can be said about some of the N.B. throttle handles I had so far experienced.

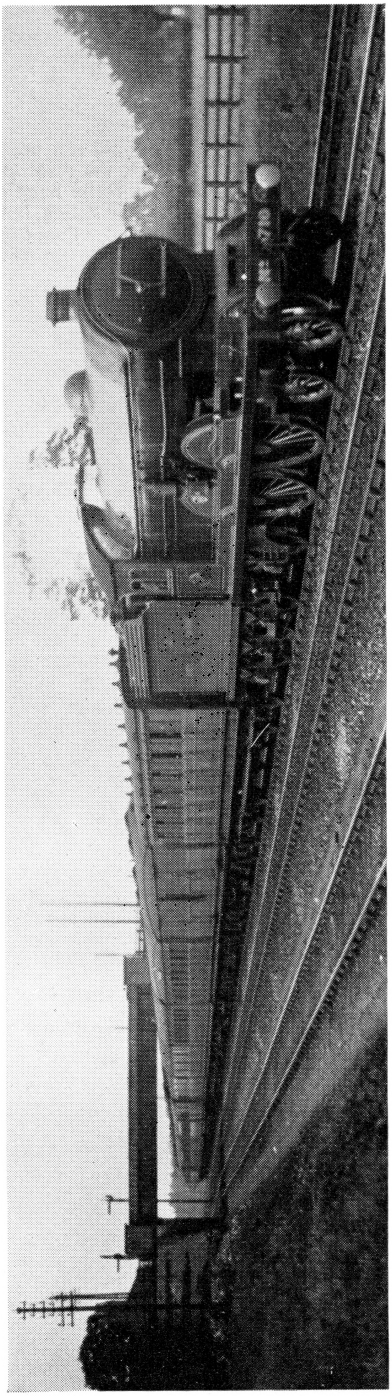
There was an easy gliding motion to that engine which pleased me greatly. As we slid quietly from Haymarket to Waverley, No. 714 told me quite a lot in two miles of light running. Here was an engine which could *run*—I knew that in my bones before we were half-way between the shed and the station.

I wasn't disappointed. The start out of Edinburgh with 350 tons was easy, but for a good few miles restrictions are the complete bar to anything above 40, so it was a mere whiff of steam which took us to Inveresk and the wide open spaces where I could let No. 714 have her head.

Shortly after leaving Edinburgh I had brought the cut-off into "number two" on the reversing quadrant, which I would say is equivalent to 25 per cent, and as we weren't using a great deal of steam I did nothing to assist the steam reverser to stay in that position. By the time we were ready to hit the high spots that reverser had gradually worked forward until it was nearly in full forward gear. I knew the drill for this, and selected one of the many pieces of metal lying beside me on the driving seat (they were bits of laminated spring plates), worked the steam reverser until I brought the pointer "one from centre," inserted the plate in the quadrant slot, then shot the reversing lever forward until the plate stopped it in the region of "2½." It was the plate which ruled the cut-off, not the steam cylinder of that reversing apparatus.

"O.K.," I thought, "this must be the usual way of running 'em." Certainly 714 was responding well on the undulating stretches prior to hitting the first high speed section of the road through Drem. That 350 tons seemed plenty for her, I felt, as I watched her reactions where the road was stiffish, but once she got her nose on to the dip for the run-in to Drem, I really got a surprise. That engine just seemed to flatten herself like a racehorse at full stretch; you could actually feel her doing this, and there was no crashing noise to accompany her action, such as I was used to on the N.B. Atlantic.

There wasn't even a sign of a roll as the



★ A "Z" in pre-grouping days, with safety valve casing beautifully polished—N.E. 4-4-2 No. 710 on an up East Coast Route express near Beningbrough. [H. Gordon Tidey

speed rose from my previous highest of 60-65 (with an occasional short hectic batter at 70). No. 714 held the rails as steady as a rock. We must have been doing over the 80 mark as we passed the box at Drem and made for the slightly rising curve through East Fortune and East Linton.

You notice I haven't used a superlative to describe this first taste of a real high-speed engine. I could have said we "tore" or "rocketed" through Drem, but that wasn't how it felt at all. There was a purring at the chimney, like the noise from a well-tuned internal combustion engine no more than ticking over, and that was the only sound of effort. On no other type of engine have I heard the same exhaust note from the chimney. There was no perceptible sound from the six rods and straps of the Stephenson's valve gear, the three big-ends, nor the boxes. It was an almost silent flight, except for the "dir-ril" of the wheels over the rail joints.

I left the throttle three-quarters open to let the slight rise ahead reduce our speed, but that flight took us up and around the rising curves and on to the flat again before it could be felt. We repeated the same trick through East Linton, where a downward stretch just had to be taken mildly to conform to the restriction of 60 at the Dunbar curve. It was after this easy run-in to Dunbar that I realised three miles later I had made my first miscalculation in driving No. 714. It was an error I never again made with an N.E. "Z" loaded to her full capacity.

As soon as we were round the curve I shoved the throttle wide open, with the reverser still where I had positioned it at Inveresk. The response I got from No. 714 on the long curving rise to Oxwellmains wasn't what I expected. Certainly the steam pressure was a few pounds short of "full," but I didn't think that should have made all that difference; still, I had better make sure. "Shut off the injector for a minute, Jock," I called to my mate, "get her on to that red mark and keep it there." I knew that certain engines could lose power out of proportion to the handful of pounds missing on the gauge, but No. 714 had behaved so beautifully up to Dunbar that it never entered my head this was an inherent weakness which would take more than a few extra pounds in pressure to cure.

I soon found out. Beyond Oxwellmains there's a mile or two of slightly downward running, where we gathered speed like the wind, starting the long seven-mile climb to Grantshouse in good order, with red-hot steam at full pressure, and Jock having no trouble in keeping it there. A mile further on I learned for sure that this was not only the finest high speed engine I'd ever handled,

it was also the weakest "tool" on a bank I had ever experienced.

The miscalculation I made at Dunbar was that I should have let the reverser out into full forward gear and worked the engine on the throttle to the top of that 1 in 96 stretch to Grantshouse, for I was only a few miles up the bank when I had to set the cut-off at "full forward." Playing about with a steam reverser when labouring up a bank was quite a tricky performance with an engine I had never driven before. I was not exactly scared, but didn't like it a bit, having to pull the lever back first to get out the plate before letting her forward again. I treated that steam key as if it was made of precious china, as I manipulated it so as to prevent the reverser flying right into back gear on the face of a hill. Actually I played safe and shut the throttle for a brief moment "just in case."

Willy-nilly I couldn't stop the lever going into full fore gear now, and my thrifty soul couldn't contemplate doing close on five miles of bank in that fashion. I tried to find a smaller plate to allow a bigger cut-off than the 2⅛ I had been running at up to then, but there were no smaller bits of spring in the collection. And I soon knew why: nothing less than full regulator with the maximum cut-off would take that capacity load up the 1 in 96.

I was amazed, for even the N.B. 4-4-0 "Scots" could do better than this with the same load. It was the first time in my driving career that I'd ever run an engine in this fashion, so I was fascinated to find out how the "Z" would take such surprising treatment.

Believe it or not, No. 714 never turned a hair. The one injector kept the boiler at the level it should be, and the blast on the fire hadn't a quarter of the effect such driving would have produced on an N.B. Atlantic or "Scott." Mr. Raven had evidently taken the driving of his three-cylinder Atlantics out of the driver's hands, by ensuring that he could not "hammer" them even if he tried.

That bank is by far the most severe in the 125-mile run between Edinburgh and Newcastle. Once I tumbled to the weak nature of No. 714, I knew what to do for the rest of the trip and I was quite *au fait* with the tricks of her steam reverser before we reached Newcastle, with an easy two or three minutes to spare on schedule. Later, as I grew more used to them, I liked the "Zs" immensely.

A curious sequel to the "full forward" running peculiarity I discovered on the "Z" took place on a Sunday evening a few years later. By this time I was more or less an "N.E. man" in my approach to the N.E. engines. The right hand drive wasn't now the awkward thing it proved on first acquaintance (although, of course, I was happier with a left-hand drive engine). But by-and-large I enjoyed the company of the "Zs" and knew most of their ways, when I stepped on one to work a train to Newcastle that Sunday night.

We weren't far from Waverley, when I inserted the plate to hold her "notched up." But when I shot the lever up against that plate, it simply disappeared from view and the lever went into "full forward." The end of the quadrant slot was burst and there was no hope of it holding that plate in position.

So that was that—one hundred-and-twenty miles without a stop and little hope of economising with the reversing lever. I tried it, of course, but it was a forlorn hope; that lever simply would not stay notched up. I grinned at my mate. "Get your coat off, my lad," I said, "you're going to shovel some coals during the next few hours."

On that Sunday night we timed the train almost to a second, and did so without anything like the expenditure of coal and water I expected. Naturally, I was careful in the way I used the throttle and Sandy didn't waste a pound of steam at the safety valves. I took more than the usual advantage of the downhill running to shut the throttle completely. Incidentally, as most East Coast railwaymen know, the distance between Edinburgh and the water troughs at Lucker is 76 miles. But that engine with her capacity load made no stop to fill up before Lucker.

THE SOUTH DEVON BANKS

(*Concluded from page* 246)

at Rattery. By Wrangaton summit the L.M.R. engine was nearly 2 min. ahead in time. But even allowing 1½ min. for starting from rest from Newton Abbot, both the strangers were well behind the equally-loaded double chimney "King" (Column 9) in point of time. However, both were working well within schedule.

I have included Run No. 12 merely as showing what happens with a really heavy load that has to be double-headed. This was the first footplate trip that I made on the down "Limited" after the war, and *King Edward VI* had the 14-coach load of 495 tons throughout. Apart from the signal stop between Brent and Ivybridge we should have gained over 4 min. ; as it was, apart from any excessive energy, we just kept time. In conclusion, after studying these and a good many other logs, I am not inclined to think that the years have brought any great improvement in locomotive performance over this difficult stretch of line ; it is very seldom today that net times of between 39¼ and 41¼ min., like those in Columns 4 to 9 inclusive, are recorded in either direction.

Right : Ex-Caledonian 4-4-0 No. 54466 assists a Class "5" 4-6-0 over Slochd summit, north of Aviemore, with the Euston-Inverness sleeper on an October morning in 1956. The third vehicle is an ex-Pullman restaurant car attached at Perth.
[*W. J. V. Anderson*

Above : "Royal Scot" 4-6-0 No. 46143 *The South Staffordshire Regiment* passes Scout Green box on the climb of Shap with a north-bound West Coast Route express in July, 1956.
[*W. J. V. Anderson*

Right : Standard Class "5" 4-6-0 No. 73044 pulls out of Sowerby Bridge with a Liverpool-Newcastle express via the Calder Valley main line.
[*Eric Treacy*

RAIL-TOUR OF THE WEST RIDING

Doncaster—Leeds and Wakefield—Dewsbury—Bradford

PART TWO
by
A. M. ROSS

IT is an old Yorkshire adage that "where there's muck, there's money." In the heavy woollen district of the West Riding there's muck—and plenty of it too. If you stand at the top of one of the hills overlooking Dewsbury, the capital of the woollen towns, spread out before you is a panorama typical of this important industrial district. The white ribbon of the Calder weaves its way through grey mills, whose towering chimneys churn out clouds of black smoke, laying a perpetual smoke haze and a suffocating "smog" when the cloud base lowers; mills with such famous names as Wormalds & Walker Ltd., whose products find their way all over the globe. To bring the raw materials in and to take out the finished goods, canals were extensively used for a time and the Calder & Hebble Navigation is the local example of this.

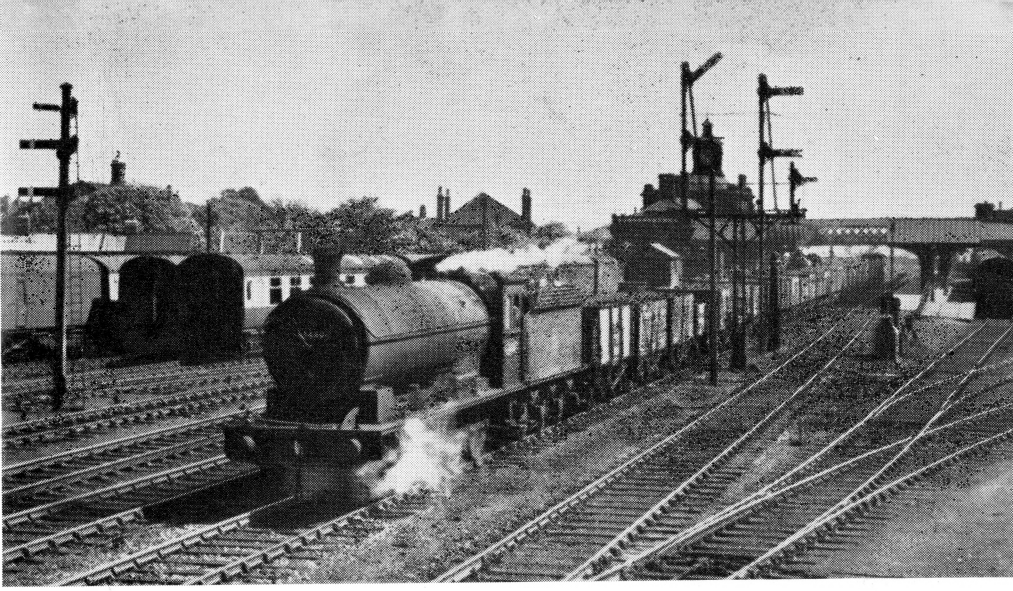
With the industrial revolution came the railways and the pioneers in this new field at first kept close to the dirt-laden and odorous rivers down in the valleys. With such large potential traffic close at hand, it is not surprising that keen competition soon developed between the railway builders. The more bold surveyors began to say: "To heck with the gradients! We're going straight there regardless of hills." It is a curious fact that the companies who did this all later became part of the G.N.R., with the result that the ex-G.N. network in the heavy woollen district is like some fairground scenic railway. The other three companies, the L. & Y.R., the L.N.W.R. and the Midland, for the most part kept close to the valleys of the Calder and Aire and their tributaries, the Colne, the Spen and other smaller streams.

The L. & Y.R. could not really be considered a strong competitor for woollens traffic, apart from the fact that one of its branches reached into Bradford, for its main line kept to the south of the district and its chief concern was coal from the pits around Wakefield and Barnsley. Similarly, the Midland steered clear to the east and north, though it would not have done so if the company had matters their own way. The L.N.W.R. provided the quickest route through the Pennines to Manchester and Liverpool, but for local communications the G.N.R. beat them all.

The Great Northern's heavy woollen district network was founded on two lines completed in the 1850's—the Leeds, Bradford & Halifax Junction Railway and the Leeds, Wakefield & Bradford Railway (later the West Yorkshire Railway). At Wakefield connection was made with the L. & Y.R. and the West Riding & Grimsby Joint Railway. The G.N.R. obtained running powers over the W.Y.R. from Wakefield to Leeds, thus permitting the transfer of their London-Leeds traffic from the L. & Y. Shaftholme Junction (Doncaster)-Askern-Knottingley line to the more direct route.

In the early 1870's, the G.N.R. absorbed the L.B. & H.J.R., the W.Y.R., and in 1866 opened the West Riding & Grimsby Joint jointly with the M.S. & L.R. During 1856-7, the L.B. & H.J.R. had constructed a line from Laisterdyke through Gildersome to the West Yorkshire line at Ardsley, so that the G.N.R. acquired a direct link between Wakefield and Bradford. Kings Cross realised also that the rapidly expanding mill towns of Dewsbury and Batley also would welcome a direct connection to London (neither the L.N.W.R. nor the L. & Y.R. provided such a service), of which the L.B. & H.J. schemes for branches from Wakefield to Ossett and Drighlington to Batley held out hopes. So it was that a fiercely graded branch was completed through Alverthorpe and Ossett as far as Dewsbury, where a temporary station was erected, by September 5, 1874. The remainder of the branch up to the Ardsley-Bradford line at Drighlington was not finally opened until March 28, 1878, while the subsidiary line to Tingley and Leeds from Batley, authorised in 1881, which was to challenge the L.N.W. monopoly of the Leeds-Batley and Dewsbury service, unaccountably took nine years to build and was not ready for traffic until August 1, 1890, although a short section from Batley to Soothill Colliery had been open for coal trains since 1888.

In 1866-7, a line was authorised from Laisterdyke to Shipley under the auspices of two companies promoted by the G.N.R. and absorbed by that concern in 1871—the Bradford & Idle and the Idle & Shipley Railways. The branch, which was single track throughout, was opened through Eccleshill, Idle and Thackley in 1874, in an attempt to capture some of the Bradford-Shipley traffic, which was at that time wholly in the hands of the Midland Railway. The terminus, a small single platform with the name of Shipley (Windhill), together



★ Class "Q6" 0-8-0 No. 63449 threads Wakefield (Westgate) station with a haul of Featherstone coal for Wrenthorpe yard. [*K. Field*

with a compact goods yard, was built alongside the Midland main line. The passenger service, however, suffered heavy losses with the onset of road competition and was withdrawn in February, 1931. A fair amount of goods traffic still works over the branch and Eccleshill and Idle stations are open for this purpose. Freight trains starting out from Windhill depot are faced with a tremendous gable from the start—about 1½ miles' continuous climbing at 1 in 50 out of the Aire Valley up through Thackley.

Another major clash between the G.N.R. and the L. & Y.R. occurred in 1882. In this year, the G.N.R. deposited a Bill proposing a line from Dewsbury up the Spen Valley to Cleckheaton in compliance with numerous requests from Spen Valley residents for a better rail service to London than that provided by the L. & Y.R. The latter vigorously opposed the Bill on the grounds that the G.N.R. would not be content to stop at Cleckheaton, but at some future date would extend its line to Halifax in direct competition with the L. & Y. route. The L. & Y. knew the complaints of the Spen Valley folk to be well justified, however, and made it known that it was prepared to allow the G.N.R. running powers from Wakefield over its Spen Valley line. These arguments persuaded the Commons to throw out the G.N. Bill and the L. & Y. suggestion was adopted. Thus the Kings Cross company gained access to Cleckheaton, Low Moor and Halifax from Wakefield along the Calder Valley. In return the L. & Y.R. was granted running powers over the G.N./M.S. & L. joint line from Wakefield to Doncaster. In order to take full advantage of these arrangements, a joint G.N. and L. & Y R. Bill was deposited in 1883 for new junctions between the two systems, at Dewsbury and at Low Moor. Work on these connections was delayed and construction did not commence until 1890.

The Dewsbury connection, running from a point ½-mile south-east of Dewsbury (Central) to the L. & Y.R. Thornhill-Dewsbury branch at Headfield Junction, was a rather costly affair. It incurred building a 300-yard masonry viaduct from the G.N. Bradford-Wakefield line, a substantial cantilever bridge across the Calder, a girder road bridge and finally a smaller edition of the river bridge across a cul-de-sac of the Calder & Hebble Navigation Canal. The Low Moor connection to Dudley Hill involved earthworks and road bridges only and was nearly 2 miles long.

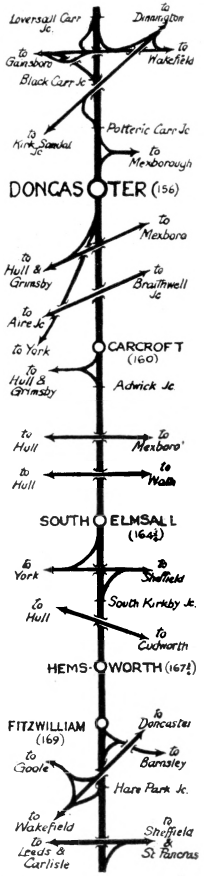
When these lines were completed the G.N.R. was able in 1893 to advertise a circular passenger service from Leeds (Central) through Tingley and Dewsbury via Thornhill to Dudley Hill, and then back to Leeds through Pudsey. The public was not aroused to any great show of enthusiasm, however, and the service was withdrawn some 20 years later. Few details are available concerning later use of the two branches. The Low Moor-Dudley Hill line was closed in 1917 and later taken up. The Dewsbury branch was used occasionally by transfer freights until the metals were lifted in the early 1930's; as far as I can discover, one of the last trains using the G.N. spur at Dewsbury was a daily freight to Dewsbury's gasworks, possibly from Soothill Colliery (now disused). The bridges and earthworks are still intact and display G.N. trespass notices, while the posts on which the branch splitting signals were mounted at Headfield Junction are in use

★ Although this summer Yarmouth-Bradford express is stopping at Drighlington, the pilot keeps steam on to the last minute as it enters the station, for the train is on the long climb at 1 in 41-99 from Batley to Birkenshaw. Double-heading the express are Class "J6" 0-6-0 No. 64182 and a "B1" 4-6-0. [*K. Field*

today, but the lofty 80-lever signal box there (over half of the 80 were spares) was destroyed by fire in 1950—and replaced by a seven-lever ground frame! The junction nowadays is used only by traffic to and from Dewsbury Junction Carriage and Wagon Works, inside the triangular junction of the L. & Y.R. Dewsbury branch with the main line, and also by the two pick-up freights which amble along the branch every day to the site of the Market Place station and its yard in the town centre. These trains call at the sidings at Headfield Junction, which serve an adjacent chemical works, and also at the town's gasworks sidings, along the Headfield Junction-Dewsbury East Junction side of the triangle.

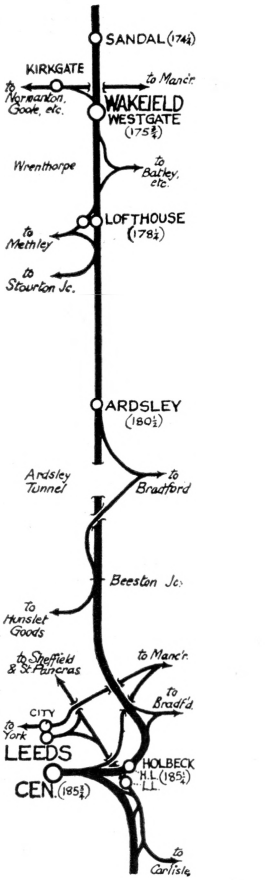
To begin a tour of the former Great Northern West Riding system, one really has to start at Doncaster, though a ride from Doncaster to Leeds is not particularly interesting from the scenic point of view. Pithead winding gears rear up all round the rather flat landscape and although there are a few junctions to keep the railway-minded occupied, many are connections with little used freight lines only. Diverging from the East Coast main line at Marshgate Junction, north of Doncaster station, West Riding trains get away to a flying start to Carcroft & Adwick-le-Street (4 miles) on track that is mostly level pegging. Here a triangular connection is made with the West Riding & Grimsby Joint proper, which has followed a straight course from Stainforth Junction, on the Doncaster-Hull line, across the East Coast main line, to which it throws off a spur northwards at Applehurst Junction. Beyond the closed station of Hampole (6½ miles), the line is crossed by the Wath branch of the Hull & Barnsley Railway, and a spur to the Hull & Barnsley station at Moorhouse & South Elmsall diverges leftward at Moorhouse Junction. A mile after South Elmsall (8¾ miles) the Swinton & Knottingley Joint Railway passes overhead and throws off a link that trails in at South Kirkby Junction, beyond the overbridge. There is only one through train between Leeds (Central) and Sheffield (Victoria)—at 1.48 a.m.—and this is routed via Doncaster, but there is no apparent reason why it could not use the spur just mentioned.

After another mile, we come in sight of Hemsworth South Junction and the H. & B.R. proper, which again passes above us and throws off another link, that joins our route from the right. Long rakes of empties are often parked on this stretch of the H. & B. before being filled at Upton Colliery, two miles to the east. Three



stations later—Hemsworth (11¾ miles), Fitzwilliam (13 miles) and Nostell (14½ miles), the latter closed to passengers on October 29, 1951—the ex-G.C. branch to Barnsley through Wintersett and Ryhill, Notton and Royston and Staincross heads away south-westwards deeper into the coalfield from a triangular connection at Nostell North and South Junctions. Coal is all the branch carries now, for the Leeds (Central)-Barnsley (Court House) passenger service was withdrawn before the war. To reach Barnsley from Leeds nowadays one travels on the ex-Midland main line to Cudworth, whence one completes the journey by means of a push-and-pull service.

From Nostell, the W.R. & G. joint line begins the descent into the Calder Valley, soon passing beneath the ex-L. & Y.R. Dearne Valley line just short of Hare Park & Crofton station (16 miles), which was closed on February 4, 1952. From the junction beyond the station, a line bears away to the right to join the L. & Y.R. at Crofton West Junction, one corner of the triangle formed by the Goole and Dearne Valley lines. Three-quarters of a mile before Sandal (18¼ miles), the ex-Midland main line bridges our route and a spur from it drops down on the left to join us at the station, where the elevated run into Wakefield begins. After a ½-mile embankment, the line crosses the Calder and runs onto a mile-long viaduct which takes it across the southern suburbs of Wakefield and the ex-L. & Y.R. Calder Valley line to join the spur from Kirkgate at West Riding Junction ⅜-mile south of Westgate station (19¾ miles). A few stopping passenger services work through both Wakefield stations, using the



Above, left and right: Diagrammatic map of the Kings Cross-Leeds main line between Doncaster and Leeds, showing junctions with other routes. The figures in brackets after station names are mileages from Kings Cross.

Below: Class "O4/8" 2-8-0 No. 63633 takes the spur from the ex-G.N. Leeds-Doncaster main line (on the viaduct in the background) south of Wakefield (Westgate) to the ex-L. & Y. Calder Valley main line at the approach to Wakefield (Kirkgate). [*K. Field*

Crofton West Junction-Hare Park spur to rejoin the parent line, while on summer Saturdays a Lincoln-Blackpool through train uses this link to gain the Calder Valley line.

Westgate station consists of up and down platforms, with two through roads between, and a two-platform bay in the northern end of the down platform accommodating the Wakefield-Bradford via Batley locals. The station lies on a 1 in 100 gradient, extending from West Riding Junction up to Wrenthorpe North box, ¾-mile north of the station, and since all passenger trains, with the exception of the "Queen of Scots," stop at Wakefield, north-bound traffic has to face this incline from a standing start. Beyond Wrenthorpe North box, the northern corner of the triangular junction with the Dewsbury and Batley line, the gradient increases to 1 in 91, then eases to 1 in 132 at the approach to Lofthouse and Outwood (22¼ miles). Here the branch to Stanley, Methley (South) and Castleford breaks away eastward from a triangular junction at the station. Curiously enough, there is only one passenger train per day direct from Wakefield to Castleford. Normally one has to change at Ardsley and catch a Leeds-Castleford diesel set, or travel via Normanton. Passengers from Bradford must travel via Leeds, but on summer Saturdays a direct connection is afforded by a Bradford-Bridlington express.

North of Lofthouse, the goods branch to the ex-Midland main line at Stourton curves away to the right to follow a winding route through Rothwell. Sidings sprawl along both sides of the line at the approach to Ardsley (24½ miles), where the direct Bradford line veers away leftward. From the station, the main line begins the three-mile descent at 1 in 99 into Leeds, passing through the short Ardsley Tunnel and beneath the high five-arch viaduct of the Batley-Tingley-Leeds branch. Both main line and branch run together down to Beeston Junction, where they join, the down line of the Tingley branch being carried over the main line on a substantial flyover bridge.

At Beeston Junction another goods line curves away sharply eastward to cross the Aire Valley and via Hunslet yard reach the Leeds-Selby line at Neville Hill West. Falling at 1 in 100/172/115/96 down to the valley floor, the line winds across the southern extremities of Leeds and at Parkside crosses one of the first railways to be built—the mineral line from Middleton Colliery to Hunslet, opened on August 12, 1812. The latter's locomotive, built by Matthew Murray, a Holbeck engineer, could haul a load of 90 tons at a spanking rate of 3 m.p.h. and was so successful that three others were ordered. Skirting Belle Isle, this goods line then crosses the ex-Midland main line between Hunslet and Stourton Yards and finally turns north-westward across the Aire and the attendant canal into the capacious South Accommodation Road Yard. At the western end of this installation, the line curves sharply uphill at 1 in 100 beneath street level and runs eastward into Neville Hill Yard.

Passengers travelling on the G.N. main line from Wakefield see only the sharply curved first 300 yards of this interesting branch, however, for they are quickly carried on downwards through cuttings past the residential suburb of Beeston and its station, closed on March 2, 1953, from which they emerge on an embankment and cross Elland Road, close by Leeds United football ground. A short climb follows, across the ex-L.N.W. Leeds-Huddersfield line and the original L.N.W. route out of Leeds, up to Wortley South Junction, where a spur to the Bradford line curves away leftward. Falling at 1 in 80 past Copley Hill M.P.D., our tracks into Leeds meet those from Bradford at Holbeck Junction box, where a spur from the L.N.W. line at Farnley climbs up on the right.

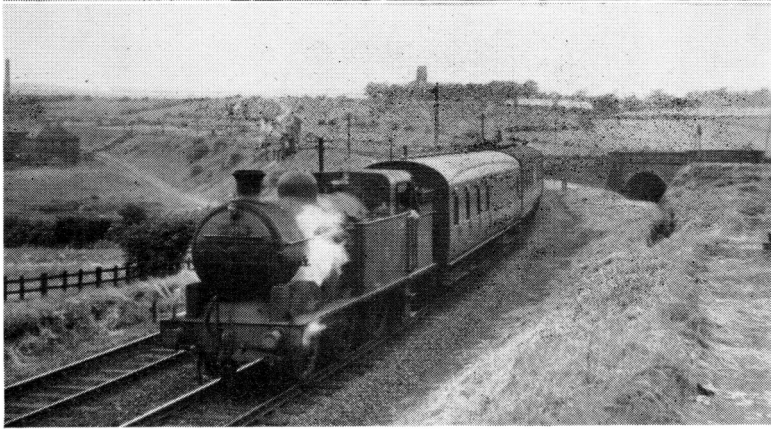
The scenery around Holbeck (High Level) station bristles with railways. Immediately beneath is the Low Level station, reached from street level by dimly lit subterranean passages, and from the High Level by a gloomy stairway. To the east is the Midland main line coming from Leeds City and parting company at Whitehall Junction with the original L.N.W. route to Huddersfield before it passes through Holbeck (Low Level) station. Also prominent on the right is the viaduct carrying the present ex-L.N.W. main line to Huddersfield. Just a few yards further down the 1 in 100 from Holbeck (High Level) station, the Geldard spur used by traffic between Leeds (Central) and Harrogate, such as the "Queen of Scots," to the lines below rises up on the left to join us at Leeds "B" box. At the bottom of the hill is Leeds (Central) station, 29¾ miles from Doncaster.

From City and Central stations in Leeds railways radiate to all points of the compass. Eastwards from Leeds (City) South runs the ex-N.E.R. Selby line, throwing off branches northwards at Crossgates to Wetherby, and Church Fenton and York at Micklefield, and southwards to Castleford at Garforth; to northward and north-westwards climb the ex-N.E.R. "Leeds Northern" to Harrogate and the ex-Midland main line over the Pennines to Carlisle; to the west, the ex-G.N. branch winds its way over the hill into Bradford; and the southern half of the compass is filled by the ex-L.N.W. main line, the ex-G.N. main line over which we have just travelled, and the ex-Midland main line to St. Pancras.

WAKEFIELD TO BRADFORD VIA DEWSBURY

★ Class "N1" 0-6-2T No. 69443 toils up the long, steep bank from Batley to Birkenshaw with a Wakefield - Bradford train and crosses the ex-L.N.W. Spen Valley line at Howden Clough.

★ Class "J39" 0-6-0 No. 64754 pauses at Drighlington with a Bradford - Wakefield train.



★ A local from Batley and Bradford headed by Class "N1" 0-6-2T No. 69453 curves round to join the main line from Leeds at Balne Lane box, outside Wakefield (Westgate). [*K. Field*

★ A "V2" 2-6-2 heads for the north past Wortley Junction, Leeds, with the down "Queen of Scots."
[*Eric Treacy*

THE "QUEEN" LEAVES LEEDS

★ Class "A3" 4-6-2 No. 60036 *Colombo* comes down the Geldard Spur from the Leeds Central line to the low level at Holbeck with the north-bound "Queen of Scots."
[*K. Field*

With such an interwoven system, it is not surprising that one can—or rather could—often reach one's destination by two or more different routes. One outstanding example is the Leeds-Castleford service. Until a few years ago there was a choice of three routes. For a quiet countryside ride you went to one of the bays in the east end of Leeds (City) South and were trundled up the Selby line to Garforth and thence over the rural single track through Kippax, Bowers and Ledston into Castleford (Central), 35 minutes after starting. Although now devoid of its passenger service, which was finally reduced to two daily workings, this route still carries excursions to the coast in summer. The shortest way is from Leeds (City) North, where you board a Knottingley train and are bustled along the ex-Midland main line through Hunslet and Woodlesford to Methley Junction, finally arriving at Castleford (Cutsyke), way out on the southern edge of the town, 20 minutes later. The most popular and frequent service is that from Leeds (Central) via Lofthouse and Stanley to Castleford (Central). This is diesel worked and takes about 33 minutes. Other examples of alternative routes are those from Leeds (City) to Harrogate via Arthington or via Wetherby, the latter route now carrying only four trains daily (8, SO), Leeds (City) to Ilkley via Arthington or via Guiseley and Leeds (City) to Huddersfield via Dewsbury or (until 1953) via the Spen Valley line through Cleckheaton and Heckmondwike.

To return to the G.N. system, the Wakefield-Dewsbury-Bradford line deserves our attention next. I remember particularly a ride to Bradford one wintry afternoon of November, 1949, in a gale and driving rain. I joined a three-coach train of vintage stock headed by one of Gresley's "N1" 0-6-2 tanks at platform 3 of Westgate station. Starting out into the rain on time, we diverged from the Leeds line at Balne Lane box and turned westwards over Balne Beck into the now closed station at Alverthorpe (1½ miles). This turned out to be a courtesy stop only ; no one alighted and the platform was deserted save for the stationmaster-porter, who quickly retired within again! Striding out across the streets of the suburb, the "N1's" harsh staccato exhaust sharpened as it climbed at 1 in 50 for a mile past the rain-drenched golf-course to Roundwood box. Here a single line branch curved in down the hill from Roundwood Colliery, ½-mile to the south. Crossing the Wakefield-Dewsbury road, we then climbed up at 1 in 100 over farmland into the island platform at Ossett (4¾ miles), where a compact yard and goods shed on the up side caters for freight traffic.

The rain rattled harder against the carriage windows as we moved out of the station into the open high up on the northern face of the Calder Valley, with the tower of Thornhill church, 2 miles away to the south-west on the opposite side, showing faintly through the gloom. Down on the valley floor, the river wound its way through rough pastureland in close company with the ex-L. & Y.R. quadruple track main line, whilst half-way up the other side, the projected Midland "main line" from Royston Junction, with its spur from Middlestown Junction down to the isolated box at Midland Junction, cut through the fields beneath Thornhill.

A quarter-mile from Ossett, the single line branch to Batley via Shaw Cross diverged at Runtling's Lane. At one time a shuttle service, known locally as the "Chickenley Bus," worked over the branch, stopping at a small station, now demolished, at Chickenley Heath. The single station building at Chickenley is still standing, however, and nearby, on the Dewsbury-Wakefield road, is a station hotel to witness that a halt did at one time exist. Nowadays, the branch carries only two Batley-Wrenthorpe daily pick-up goods trains, which call at Shaw Cross Colliery; no traffic is worked in the reverse direction. On leaving Batley G.N. Yard, these two trains are faced with gradients of 1 in 50/80 up to the 209 yards-long Shaw Cross Tunnel.

The downgrade from Ossett steepened to 1 in 55 from 1 in 100. We rattled through cutting and over an embankment past the growing housing estate at Pildacre, and then the brakes came on to stop us at the decrepit Earlsheaton station (6¼ miles), which was later closed to all traffic on June 8, 1953, in the shadow of the hill on which the village stands. A 1 in 55 descent carried us through the 179 yards-long tunnel beneath the hill, from which the line emerged into the Calder Valley proper. The mills of Dewsbury were spread out in front and to the left and the main Wakefield road climbed high above us to the right as the train curved past Dewsbury Junction box—a misnomer, since the connection to the L. & Y.R. line at Headfield Junction across the river was taken out in 1930 ; now the box guards only the entrance to the capacious goods yard, on our left.

Curving to the right through the 213 yards-long tunnel beneath the main roads to Wakefield and Leeds, we emerged in Dewsbury's Central station (7¼ miles), an island platform above street level. All goods traffic for Dewsbury via the G.N. route is now concentrated at the yard mentioned in the previous paragraph, for the two sidings which flanked the Central station have been removed and the signal-box at the Bradford end is disused. The station has seen royalty twice—King

LOCALS ON HONITON BANK

Above : S.R. Class "S15" 4-6-0 No. 30847 climbs the bank from the Exeter side with an up stopping train. [*John Robertson*

Below : The 1.55 p.m. Axminster-Exeter Central emerges from Honiton Tunnel and begins the descent behind Class "U" 2-6-0 No. 31794. [*W. N. Lockett*

George V and Queen Mary on July 10, 1912, and the Queen and the Duke of Edinburgh on October 28, 1954. On the latter occasion, the royal train was hauled from Barnsley by two immaculate Stanier Class "5" 4-6-0s, surely an extremely rare, if not unique, sight for this ex-G.N. branch; one side—only—of Central station was specially painted for the event!

Beyond, we dived into a cutting and finally into the 140 yards-long tunnel, which burrows beneath the ex-L.N.W. Leeds-Huddersfield line, to emerge at Batley Carr station (7½ miles), deep in a brick cutting. To call it a station is really an exaggeration, for it consisted merely of two platforms and a small office-signalbox controlling two dilapidated somersault signals, all of which, with the exception of the platforms, were removed after the closure of the station on March 6, 1950. Entrance to the platforms was through a small gate from a rough unsurfaced road which climbed from the streets of Batley Carr and bridged the G.N. and L.N.W. lines on its way to Crackenedge and Hanging Heaton high above.

Pulling out past the site of the yard on the down side further on, the "N1" blasted up the 1 in 89 beyond in fine style and after passing beneath the L.N.W. line once more, stormed up the final 1 in 53 across a short viaduct above the town's gasworks into Batley station (8½ miles). A brisk trade was carried on here as we paused at the eastern island platform, while the tank blew off noisily and the fireman stoked up in preparation for the gruelling climb ahead. To the right, the single line to Shaw Cross and Ossett crept away unnoticed from a triangular junction in the area of the ex-G.N. goods depot.

Some 300 yards north of the station, the Tingley branch breaks away to the right, while the Bradford line begins its tremendous 5-mile drag up to Birkenshaw ; climbing at 1 in 50, it parallels the ex-L.N.W. Huddersfield-Leeds main line for a short distance, then swings leftward over the latter above the ex-L.N.W. Lady Anne Crossing. The mills now give way to farmland and soon the bank steepens to 1 in 41 before the branch enters the small station of Upper Batley (9¾ miles), closed on February 4, 1952. I remember on this particular occasion that our call was in vain, and what the driver said to his mate is probably unprintable, for on restarting, the "N1" put up a glorious pyrotechnic display as it struggled to find its feet on the slippery rails. With sparks flying and throwing out clouds of smoke that would have done justice to one of the mill chimneys back down in the valley, the "N1" at length managed an unsteady progress up ¾-mile at 1 in 43 into Howden Clough for Birstall (10½ miles), another station which has since fallen to the axe, this time on December 1, 1952. I should imagine that the air round the engine cab was blue by this time, for we met with no more success here than at the previous station. Once more we had a free firework display as the "N1" battled on up the last ¾-mile at 1 in 42, across the ex-L.N.W. Spen Valley line between Upper Birstall station and Gildersome Tunnel, into Adwalton Junction, where the line from Ardsley joined us. Then, some ⅝-mile further on and on an easier grade of 1 in 99, we came to a halt at Drighlington & Adwalton (12 miles). Here the train was battered by the full force of the wind and rain which was sweeping down almost unhindered from the moors above Halifax away to the west, but passengers had better shelter accommodation than at the previous two stations, whose fate Drighlington has not as yet suffered.

Land rolls away downward on both sides as the line heads for Birkenshaw & Tong (13¼ miles), closed on October 5, 1953, through the short Birkenshaw Tunnel and up the final ¼-mile at 1 in 236 to the summit. Away to the east the chimneys of Leeds are visible through a gap in the hills and on fine days you can glimpse the slender Holme Moss television mast on the windswept moors near Holmfirth, south-west of Huddersfield, some 20 miles away. From Dewsbury, now 7 miles distant, the line has risen through a vertical height of 550 feet on an average gradient of 1 in 65. Bradford Exchange station now lies deep in the hollow at the foot of six miles' downhill running, although the distance "as the crow flies" is no more than three miles.

Dudley Hill (15¼ miles) is 1¼ miles down the bank and grass sprouts on the four platforms nowadays, for the station was closed on April 7, 1952. The two eastern faces are even more decrepit, for they have not been used since the withdrawal of the passenger service between the station and Low Moor I mentioned in the introduction to this article. This branch, the earthworks of which are still to be seen, descended to pass beneath the parent line some 300 yards south of the station and turned south-westward towards Low Moor.

In the early 1900's, the G.N.R. intended to complete the triangle with a short spur from the Wakefield-Bradford line north of Birkenshaw to the Dudley Hill-Low Moor branch. The earthworks had already been completed before it was discovered that, once the line was open, the L. & Y.R. could claim compulsory running powers over it to Wakefield. Because of this, the track was never laid (as was erroneously shown on last month's map), but the earthworks still remain even today. This spur would have enabled the G.N.R. to run through carriages from Kings Cross to Halifax more

directly than by the roundabout route via Queensbury.

From Dudley Hill, our Bradford train coasted on down at 1 in 58 to Broad Lane Junction. This was the point of convergence with the Low Moor-Dudley Hill line, which ran parallel to the Bradford line and to the south of it for some distance before joining it. From Broad Lane Junction there used to be a connection through a now weed-choked cutting, the Pudsey loop at Tyersal Junction, completing a triangle, but this spur was taken out four or five years ago and the boxes at Broad Lane and Tyersal Junctions have been demolished. The last train to use the Broad Lane-Tyersal spur was an afternoon goods from Wakefield to Leeds via Gildersome, Drighlington and Pudsey. The down line of the Low Moor branch has been connected to the up Wakefield line and is now an up loop from Broad Lane to Dudley Hill, the points of the Broad Lane connection being worked electrically from Cutler's Junction; this box also works two surviving Broad Lane signals as an intermediate block.

Cutler's Junction is the convergence with the Pudsey branch from Leeds and the diverging point of the single line Idle and Shipley (Windhill) branch, which curves away to the right, whilst our route swings sharply left into the walled-in island platforms of Laisterdyke (16¾ miles). The line from Leeds via Stanningley, that from Laisterdyke goods depot and another connection from the Shipley branch join us in a maze of pointwork just before the platform ramps. The double track triangular junction which the Shipley line makes with the Wakefield route at Laisterdyke East and Cutler's Junctions gives it an air of importance. But immediately after it has threaded the busy yard bordering the track from Laisterdyke and the other arm of the triangle has swung in at Quarry Gap Junction, almost on the overbridge crossing the Stanningley line, the Shipley branch is singled, being worked by electric token from Quarry Gap to Shipley. The sidings mentioned alongside the Laisterdyke-Quarry Gap spur form an important interchange yard, since all G.N. branch trains for Shipley originate here. There are seven freights daily to Shipley, one of which continues to Keighley and another to as far as Skipton; all of them return the same day to Laisterdyke. Most of these trains consist of hopper wagons loaded with coal from Wakefield and district pits on the outward trip and the return workings are therefore mainly empties. On the down run, the maximum number of loaded minerals permissible is 28 and since it is downhill all the way from Eccleshill to Shipley, the gradient culminating in a final 1 in 50 descent from Thackley, two stops are made to pin down brakes, at Eccleshill and again at Idle, followed by a final check at Thackley. At the foot of the incline in Shipley is a sand drag to prevent runaways from ending up in the street. Climbing the hill, the number of loaded wagons is restricted to 20 and usually the "J39" 0-6-0s, the staple motive power, tackle the 1 in 50 unaided; only rarely is banking seen.

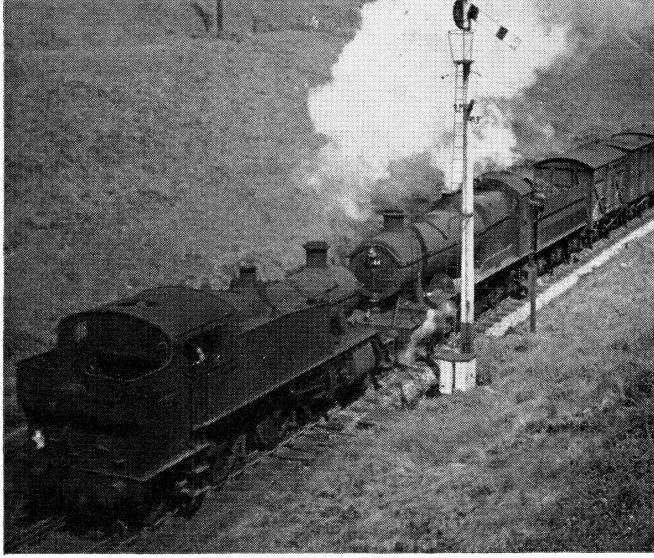
At the other end of Laisterdyke station the metals again split up. From Laisterdyke West box, the Bradford train drops precipitously downhill at 1 in 49 towards the terminus, with the spur to the ex-L. & Y.R. Bowling Junction and Low Moor striding away over embankment and bridge to the left. After ¾-mile comes a short stretch at 1 in 44 past Hammerton Street box and Bradford motive power depot, which housed a host of "J50" and "N1" tanks, supplemented by "B1s" and "J6" and "J39" 0-6-0s when last I saw it. Beyond, the train threads the 180 yards-long Wakefield Road Tunnel and a narrow retaining walled cutting beneath the streets, then the flanges shriek as it wheels sharply right into the curved platforms of the "V"-shaped St. Dunstans station (18 miles); here the moorland route to Queensbury breaks away leftward round a 10 m.p.h. speed-restricted reverse curve just before the platform end to dive beneath the ex-L. & Y.R. Low Moor line. The other arm of the station was used by the Bradford-Halifax or Keighley via Queensbury trains before the station was closed at the same time as Dudley Hill. Easing out of St. Dunstan's, the Bradford train now has only to make a cautious descent of the last ¾-mile at 1 in 50 alongside the ex-L. & Y.R. metals from Mill Lane Junction box into the gloom of Bradford (Exchange) station.

The line these days is a tale of stations that are no more. Of the 13 intermediate stations open when my 1949 journey was made, eight have now disappeared from public timetables; Howden Clough and Upper Batley have been demolished and St. Dunstan's platforms have been removed. Summer excursion trains still call at Dudley Hill, Birkenshaw and Tong and Alverthorpe, however, From February 25 last, some new life was injected into the regular service when a completely revised timetable was brought into operation between Wakefield, Dewsbury and Bradford. There is now an hourly diesel service in both directions of 20 up and 18 down trains (previously there were 17 up and 15 down); of the 20 up, three include through carriages to Kings Cross running in the same times as before and they are, of course, steam-hauled. Simultaneously with the introduction of these services, new single short distance fares are being issued.

(*To be continued*)

Through the Big Hole

by R. L. GWILLAM



★ A South Wales freight emerges from the Severn Tunnel. A W.R. 2-8-0 is the train engine and the "61XX" 2-6-2T has been the helper through the tunnel.
[*J. G. Hubback*

TO Western men everywhere, the Severn Tunnel is known as "the Big Hole," thus differentiating Britain's longest main line tunnel from the rest throughout the country, which are known simply as "holes." The gradients through it and over the remainder of the route between Swindon and Newport are probably better known to *Trains Illustrated* readers than to the majority of firemen. The latter are not so much concerned with actual steepness of the grade as with their ability to fire engines over it. Were I not an ardent enthusiast as well as a railwayman, I, too, would probably be as ignorant in these matters as most of my colleagues.

Swindon freights usually start from the "Transfer," the name given to an area lying to the east of the station, and stretching from the Greaseworks to the Swindon Gasworks on the up side (taking in Cocklebury and "the Spike" Yards), and from Highworth Junction to a point opposite Swindon Goods Yard box on the down side, including Nos. 1 and 2 Yards. Generally, the train to be worked has arrived from "up the line," and consequently "away" men have to be relieved; this is done on the orders of Control. The locomotive crews taking over are under the jurisdiction of Control (at Swindon the Control Link is "No. 7 Goods"), and are required to know the roads to Bristol (both via Bath and via Badminton), Westbury, Yarnton, Reading, and Severn Tunnel Junction. Most drivers know the routes beyond these points, but they are the usual limit of required knowledge for the Link concerned. I have been to Cardiff, Banbury, Taunton and Kensington under drivers from this Link—just to show you how far we can get to.

After relieving the incoming men, I get down to the job of bringing more coal forward (what some firemen fetch down wouldn't take me past Bassett). Soon we're right away. The dummy comes off, the down starter is off, and the Yard Inspector has waved us away. Slowly, the train pulls out of the Yard. The guard exchanges signals with the footplate, and westwards into the night trundles a "28XX" 2-8-0, 35 wagons and a brake-van.

As we pass through the station, I begin work. First, the shovel blade is inserted into the firebox to deflect a stream of air to the four sides, so that I can assess what sort of fire I have; this is impossible to discover whilst the engine is standing. I then start to build up the back, with just the odd shovelful down the front end to make a balanced job of it, and a touch of blower to draw up a bit. The two back dampers are wide open, the front one closed, and the intermediate one will be opened just a notch. As the driver pulls back the lever, the "clock" starts to come round, so that by the time we pass Hay Lane, and the nose of the engine dips downhill on the falling grade, the water level in the glass shows half a boiler. The exhaust injector will not be used a lot, as I find that the overflow from this will waste more than is good for us, and so the direct steam injector is put on. Gurgling nicely, it balances the effect of the bigger fire on the evaporation of the water, and holds the clock back just off the mark.

The electric signals at Studley are all off. They're rather blinding if you look at them directly, so I concentrate on a point along the up road ahead of us, rather than on our own down line. The distant for Bassett is off, so I call to the driver: "Double decker . . . right away." There is no need for more than a touch of the brake as we swing across the road to take the main Badminton line to the west of Wootton Bassett. Taking this crossing on a passenger is a different matter; then you have to drop everything and hang on if you're travelling

at speeds in excess of 50, whereas on a goods, you really have to do no more than lean to the curve.

Firing is slight as we continue through Brinkworth and along the Avon Valley, but, thinking of the long grind uphill after Somerford is passed, I cannot afford to let the fire down too much. Beyond Brinkworth station I start to make up the fire in earnest. All round the box I work, eight shovelsful at a time, just giving the previous lot time to catch up before going round again. After every three firings, I give the footplate a touch of the handbrush and a sprinkle from the "pep-pipe." The injector is shut off about here, also, so that a full head of steam is available on the flat round Somerford, where the speed can be increased in a sort of "dummy rush." Once the safety valves start to sizzle, then it's time enough to put on the injector again, until the clock is back to 220, which is my usual working pressure; that leaves 5 lb. "in hand," and saves waste from the safety valves—not always possible, it's true, but that's how I try to work it.

Up through Hullavington the engine is working hard, and so is the fireman, keeping steam and the boiler level up, so that, when we top the rise half a mile short of Badminton station, I shall have plenty "in the pot" to allow for the nose dipping down over the crest. Firing is ceased just before we top the rise; my mark is an overbridge two or three hundred yards short of the summit.

Speed increases as we run through Badminton and round the curve into Sodbury tunnel. Here it's down with the two front end dampers, if they're open, and I close the firedoors, adjusting the blower to give a good pull on the fire; there is no fear of blowbacks that way. Many drivers have told me not to bother, but I still take the precaution, nevertheless. Emerging from the tunnel, I stand by the scoop lowering gear, waiting for the driver to give me the tip to drop scoop. I have the injector on to make sure we have the boiler full, thus ensuring a maximum fill of water. Over the troughs I watch the indicator like a hawk, taking the first winding-up turn as the indicator shows 100 gallons short of "Full," and winding up in earnest as the float comes to the "Full" mark. I got soaked once before through leaving the scoop fully down until the float showed "Full," so I don't get caught any more.

Now we are passing Wapley, where the signalbox is closed, and Westerleigh, seeing the Midland line below us as we pass along the high embankment which gradually takes us into the Severn Valley and off the Cotswolds. We have to call at Stoke Gifford, so steam is shut off at Winterbourne, allowing us to coast on into the rock cutting preceding the opening-out of the Yard at Stoke. I have not fired since before Badminton, and the fire is fairly well down—a good thing. I have "half a pot" of water, and pressure is back to 200 lb., just right for the moment. Pulling right up to the western departure "board" at Stoke, I put the handbrake on, the driver goes off to make the tea, and I clean up the footplate after pulling down more coal, filling a bucket with hot water ready for a wash. We usually have time for some grub here at Stoke, and it makes a bit of a break. In winter, we go into the van, or the cabin in the yard, one at a time, for a warm and our break.

"Right Away" once more, we get the road across the right-hand side of the triangle, leaving the Filton line to our left, and come to Patchway. We coast through the station, and draw up to the Stop-board immediately under the road bridge carrying A.38 from the West Country to Birmingham and Derby. After the guard has pinned down the wagon-brakes, we're away again. We take the strain of the load, while the driver watches for a tip from the guard that all is in order, and then we slowly pull on down through Patchway tunnel. The up line here is a different proposition. The longer tunnel on that track is wicked when you're working hard; how the bankers' crews survive is beyond me as the conditions on the train engine are bad enough. The down tunnel has no air vents, since most trains coast through, using no steam, and the current of air through the single bore is sufficient to keep it reasonably clear. Once out of the main tunnel on our line, a shorter bore is traversed, and then we see the up road disappearing into its tunnel below us on the right.

Now we pick up speed and rattle along toward Pilning at a good rate. On a clear night it's a wonderful sight ahead as we pick out our road from all the red lights at the approach to Pilning; far away, the glow of light over Chepstow can be clearly seen and even Avonmouth is visible. Soon we put the brakes into the train and take the road behind the box, to pick up a pilot engine for the trip "through the hole." Coupled up (that's the pilot engine fireman's job), we exchange signals and make sure our guard is aboard, for while we were attaching the pilot, he was taking up the brakes put down at Patchway. Then we pull out from the back loop to the running loop, and I put the injector on again, to keep the engine quiet whilst we complete the run down to the lights at the bottom of the bank. Under clear signals, we leave the loop for the down main, pass under the rail and road bridge at Redwick, and enter the Tunnel proper.

Steam and smoke fill the cab immediately,

and the fire illuminates us both on the footplate, creating a scene that I imagine Dante's Inferno would look like. A sharp blast on the whistle of the pilot tells us that he has come to the lights at the bottom of the bank, and I immediately commence firing hard. A second whistle is a warning that we have come to the second lot of lights, and that the climb out has begun. Slowly the clock comes round, and I put the pricker into the fire to lift it up a bit. Both injectors on now, and I'm still firing. The mad rush of speed with which we entered the Tunnel has considerably slackened, and the exhausts of both engines thunder through the bore in a deafening roar. As we emerge from the portal of the tunnel, the safety valve lifts, and escaping steam adds its voice to the din of the two engines working at full pressure up the bank to the Junction. I have both injectors on still, but as soon as the clock comes off the mark, I shall shut off the exhaust injector and work only on the live steam one again.

At the box half-way up the bank I notice that there is a nice bit of watercress growing in the stream beside the line: I wonder if the "bobby" (signalman) ever has any? Further reflections on this matter are brought to an abrupt end by the need to resume firing as we top the rise, and cross the main line to bring us into Severn Tunnel Junction station, where I jump down from the footplate to uncouple the pilot and restore my Class "F" headlamps. Once the pilot has been crossed over to his stand on the Up Banker Spur, we get the road and again cross over, by Severn Tunnel Junction West box, to take the main line to Newport. The work is over, so far as I am concerned. It is now a matter of running down the fire ready for going on shed at Ebbw Junction.

One more job remains—to take water again from the troughs at Undy, and this completed, I sit down (for the second time on this trip) and have a well-earned smoke. We put our train away at East Usk, and run light to Newport station, where we are to be relieved. Our "28" goes sedately off to shed, and we make our second can of tea, have our breakfast and prepare to home on "the cushions," if we're lucky, or in a brake van of a goods if we aren't. Either way, our night's work is done, and we shall be home by six, which will give us about two hours' overtime for our trouble.

New Reading for Railfans

STEAM LOCOMOTIVE. By O. S. Nock. *Allen & Unwin.* 25*s.*

Mr. Nock's new book ranges widely over British steam locomotive history and the great men concerned in its development from the Rainhill Trials to 1946. Few people have considered what failure of the steam locomotive at Rainhill would have meant and few realise the magnitude of the problems facing locomotive engineers of the past; on matters like this, and on the railway economics and changing circumstances which have had such far-reaching effects on locomotive design, Mr. Nock is most enlightening in his opening chapters. As might be expected from the author, some epic locomotive performances receive attention. It is true, as Mr. Nock says, that on most railways of the past the mileages worked by individual engines were much less than those considered economic today; nevertheless, he might have added that some monthly mileages put up by locomotives 50 or more years ago would have put most modern British engines in the shade. Mr. Nock describes a daily mileage in 1896 of 230 as high; it may well have been on the G.E.R. and some other lines, but for years previously L.N.W. engines had been working daily from Euston to Manchester and back, a distance of over 366 miles. In his chapter "The High Noon of Steam," Mr. Nock pays a well-merited tribute to George Whale, who was faced with a prodigious task on Webb's retirement and accomplished it most ably; as the author says, the "Precursor" must be unique among British locomotives in having no teething troubles. More open to question are two statements in the following chapter. Comparing the 4-6-0s of Drummond, McIntosh and Churchward, Mr. Nock claims that a clue to the "Star" 4-6-0's success could be seen in the size of their tenders, as McIntosh and Drummond used large bogie ones for runs of 100 to 150 miles, whereas Churchward found six-wheeled ones adequate for the 225 miles from Paddington to Plymouth; this seems most curious reasoning, as the explanation surely lies in the provision of water troughs on the G.W.R. Even more extraordinary is the remark that the benefits derived from superheating steam are not "something for nothing" as slightly more coal has to be used in the process; in point of fact, the combined heat expenditure for steam generation and steam superheat is lower than that entailed in producing the same volume of saturated steam, and therefore there must be economy in fuel consumption. Generally speaking, however, the book is an informative and readable survey of history, well illustrated by 32 pages of plates, many of which are unfamiliar and which include personalities in the locomotive world as well as the locomotives themselves. C.R.H.S.

5096

Left: "Castle" Class 4-6-0 No. 5096 *Bridgwater Castle* rounds the last sea wall curve into Teignmouth with the 6.45 a.m. Bristol-Plymouth (including through coaches from Manchester and Glasgow) on August 8, 1956.

HOLIDAY PREVIEW

of the Dawlish-Teignmouth section of the W.R. West of England main line—favourite haunt of enthusiasts.

Left : An up freight rumbles through Teignmouth and out on to the sea wall behind 2-8-0 No. 3834 on August 8, 1956.

Above : The up "Torbay Express," headed by "Castle" 4-6-0 No. 5038 *Morlais Castle*, approaches Dawlish Warren on August 9, 1956.

Below : The 7.30 a.m. Truro-Paddington leans to the curve through Dawlish Warren, with the seaside resort of Dawlish in the left background. The engine is 4-6-0 No. 6025 *King Henry III*.

[**Photos : R. J. BLENKINSOP**

Above : The Torbay portion of the down "Cornishman" emerges from Parson's Tunnel, in the cliffs between Dawlish and Teignmouth. It is being worked forward from Exeter by 4-6-0 No. 6829 *Burmington Grange.* [*D. I. Beaver*

Below : "Hall" 4-6-0 No. 4992 *Crosby Hall* pulls out of Dawlish Warren station on August 9, 1956, with an Exeter-Paignton stopping train. Dimly seen in the distance are the hills above Exmouth, on the other side of the Exe estuary. [*T. E. Williams*

LETTERS TO THE EDITOR

The "Royal Scots"

SIR,—I have, in the past, read the writings of your contributor "Toram Beg" with interest and occasional amusement (though not with entire agreement), but always wondered inwardly just what sort of engineman this could be who told the world how good he was at the throttle. After reading his article in your February issue, I feel unable to restrain my commentary on "Toram Beg."

I strongly suspect, though he does not say so, that the two trips described must have been the only two he made on "Royal Scots," and since only one engine was involved, that would hardly be enough to judge a class of 71 engines effectively.

All the talk about "that wee narrow hole (the steam port . . .)" is, of course, so much blather. It may surprise our worthy commentator to know that the port opening to steam of a "Royal Scot" in *midgear* is as much as on his pet *Spearmint* at something like 25 per cut off. (I exclude an "A3's" middle valve, because very few people know what that *does* do!) In addition, with 9 in. valves to feed 18 in. cylinders at 250 lb. pressure (compared with 8 in. valves for 19 in. cylinders at 220 lb. pressure) the "Scot" is in a much happier position to get steam to those "slow-moving pistons."

I will grant that the "Scots" are not the most perfect of steamers, but particularly when driven with a wide-open regulator they don't leave much to be desired. And as for shutting off the injector to encourage steaming—well, it happens with a "dud" engine, but not as a regular thing from that cause. The fact is that few ex-L.M.S. engines *need* the injector on all the time—you fill them up to the whistle if you do. But they will maintain the boiler when the engine is driven hard, and that's more than can be said for an "A3."

I hesitate to lecture "Toram Beg" on the properties of steam, but I hope he will accept my assurance, backed by the work of the most eminent scientists in the world, that steam at a given pressure and temperature, saturated (as it must be in the boiler) has the same heat content, and thus the same work potential, whether it was generated in a second or a year. After that, the amount of extra heat you put into it (superheating) depends only on the firebox temperature and the steam flow rate (not, be it noted, on pressure or water level in the boiler!).

When it comes to the riding properties of the "Scots," then I laugh at "Toram Beg's" comments uproariously, and so will most L.M. Region enginemen who handle these engines—though sparing a tender finger to feel their bruises! There must be nearly as many shopped specially or at early mileages for rough riding as go in for normal repairs. Ever seen a fireman drop his shovel in midswing, *sit* on the cab floor and hang on for safety? I have—on straight flat-bottomed track at 65 m.p.h.! Of course, they are not quite as bad now, with heavier springs and the road in pretty good fettle, as they were just after the war, but they can still be as vicious as a mule (and at the same end) when they choose.

But, rough riding or not, the thing that really beats me is how any ex-L.N.E.R. engineman has the effrontery to criticise ex-L.M.S. engines. *And* I speak with many thousands of miles experience on "A3s," "B1s" and others—and in Scotland as well, "Toram Beg."

In view of my position, Sir, I would ask you to permit me, should you wish to make use of this letter, to sign myself :

Bury. "45671."

To Cambridge by the Midland

SIR,—I was very interested to read Mr. W. R. Webster's article (*March issue*), but while this was very enlightening from the historical angle, I think the following points should be made regarding present day practice.

The 4.55 p.m. Cambridge-Kettering is not used by the employees at the preserve factory at Histon, as they work a five-day week, 8 a.m.-6 p.m.; those residing beyond Histon return home by the 5.58 p.m. Cambridge-St. Ives. The only train from Kettering which stops at all stations from St. Ives to Cambridge is the 8.12 p.m. (SO). As stated in the article, the 8.34 a.m. from Kettering runs non-stop from St. Ives, being allowed 25 minutes for the 14¾-mile journey. The 2.10 p.m. from Kettering omits calls at Oakington and Histon, and a recent alteration gives the 5.26 p.m. from Kettering (SX) a non-stop run from St. Ives in 22 minutes.

With regard to engine workings, the Kettering diagrams are shared regularly by Ivatt 2-6-0s Nos. 46403/4/44/95/6 and Standard Class "2" 2-6-0s Nos. 78020/1. The Cambridge duty, for so long monopolised by No. 65390, is now a little varied, with other "J15s," the Cambridge "Ivatts" and until lately an occasional "E4." During the summer months an additional Kettering 2-6-0 works with a brake van from Kettering to Histon and forms a perishables special back at about 5 p.m., clearing the Midland area fruit and flowers traffic from the intermediate stations. The through trains from Birmingham or Leicester to Clacton bring a Leicester engine into Cambridge, Nos. 78028/9 appearing last

summer and working 8 or 9-coach trains through from Leicester.

Passenger traffic can be heavy during the summer as all trains from Cambridge make connections at Kettering with trains for the north. The 7.25 a.m. down connects via Manchester Central and Victoria with such resorts as Blackpool and Fleetwood, and it is in fact quicker to travel to Leeds via Kettering on the 11.25 a.m. from Cambridge, than via March and Doncaster on the 11.31 a.m.

Cambridge. J. B. SWINN.

SIR,—I read Mr. Webster's article with much interest and would like to add one other point. The original plan was to link the old Midland and Eastern main lines at Kettering and St. Neots. The route was to pass south of Covington after Hargrave and thence to Tilbrook, Kimbolton, Great Staughton, Hail Weston and eventually St. Neots. However, trouble arose at Kimbolton, where the Duke of Manchester objected to the line crossing his estate, and the line was constructed to Huntingdon.

Although the Kimbolton station is so called, it is actually 2½ miles from Kimbolton, in the Parish of Tilbrook, but nearest to the village of Catworth to the north. As it is so isolated, it is not exactly busy, the only regular passengers being boys of Kimbolton school, who are conveyed to and from the station at the beginning and end of term by bus.

Gt. Staughton, Hunts. D. J. LLOYD.

SIR,—May I raise two small points arising from the articles in your March issue on the Birmingham-Bristol and Kettering-Cambridge lines, which were of great interest to me as a former L.M.S. employee?

1—The 31-minute start-to-stop timings between Mangotsfield and Gloucester were not operative in 1932, as stated, but were inaugurated on July 17, 1933. I travelled on the 10.25 a.m. train from Bristol, when Driver J. D. James of Bristol shed, on compound 4-4-0 No. 1025 hauling 246 tons, ran the 32 miles in 31 min. 8 sec. The afternoon train on that day was worked by a Class "2," No. 513.

2—Your contributor mentions the line from Kettering to Cambridge as leaving Midland territory just before entering Huntingdon East station; the R.C.H. diagram book for 1914 depicts a different and somewhat curious situation, whereby the northern part of the station (connected with the G.N.R.) was G.N. & G.E. Joint, and the southern part, used by the Midland trains, was shown as the property of that company. The Joint and Midland lines are depicted as converging into the G.N. & G.E. Joint Line 8 chains east of the station.

Whetstone, N.20. D. S. M. BARRIE.

SIR,—Seeing my photo of the double-header brings back memories of the numerous times I visited this line on Bank Holidays in order to see the 2-4-0s working in pairs. They would attain great speed flying down the bank near Buckden. Incidentally I submitted this view to the *L.M.S. Magazine* but I was told they were not allowed to publish it, as the practice of using a pair of 2-4-0s was forbidden by the running department! Anyway, I noticed that after this date 0-6-0s, or a 2-4-0 plus an 0-6-0, became the usual feature. In addition to the engines mentioned by Mr. Webster, I recall Nos. 108 and 226, and in 1918 an "800" class—No. 61, I think.

Hove. J. E. KITE.

The Birmingham-Bristol Main Line

SIR,—The bays at Mangotsfield, referred to in your March article, do have a certain usefulness though not for passenger trains. The outer face of the up platform is ideal for receiving the long van trains conveying pigeons which arrive there for release. The bay behind the Bath-Bristol platform is used at certain times of the day for holding vans pending transfer between the two routes.

The "attenuated" platforms at Cheltenham (Lansdown) are a reproach to any railway undertaking and should have been dealt with by the L.M.S.R. long ago. The southbound holds eight ; the northbound only seven coaches. Extension of both platforms southwards would be a fairly simple matter. On the down side there is room on railway property while, on the up side, the lineside portions of a few lengthy private gardens could be purchased.

Cheltenham. B. COOKE.

"The South Western Railway"

SIR,—It is terribly not-done for an author to rise at a review, but for nearly half a century I have been doing things not-done. While delighted at your generous notice, and in entire agreement about that map, the history of which may some day be revealed, I cannot accept the "grey mark." If your reviewer will look again at my title page he will observe that this reads : *The South Western Railway: Its Mechanical History and Background.* There is nothing to prevent Valerius Flaccus or somebody else from writing *The South Western Railway: Its Business History and Foreground.*

Brighton, 1. C. HAMILTON ELLIS.

(*Our reviewer replies:* "Mr. Hamilton Ellis should organise a better liaison with his publisher's art director, who ignored the sub-title in his jacket design, and publicity director, who does not seem to have made the distinction clear in his propaganda for the book, to judge by advertisements I have seen. Score deuce, I feel."—*Ed.*)

The Kington Branch

SIR,—Having lived at Presteigne for several years I was very pleased to see Mr. G. F. Bannister's article in the February issue. May I, however, make a few comments and additions.

Despite its population of only about 1,200, Presteigne could hardly be termed the "village capital" of Radnorshire; not only is it the county town, it is the Assize town for the county. After the line lost its passenger services, "57XXs" worked the daily freight; later the "74XXs" took over, but were not so popular. I have seen Collett 0-6-0s at Presteigne on weedkiller trains, and a few years ago a "Dean goods," No. 2515, worked the daily freight for nearly a week.

R.A.P.C., Singapore. J. BENSON.

SIR,—I was very interested to read the article by Mr. Bannister on the Kington branch as I have been intimately acquainted with it for the past thirty years.

Prior to the second World War, two engines were stationed at Kington, and three sets of men; two sets and one engine worked the Eardisley and Presteigne services and except on Saturdays, the third set of men worked with the other engine on a goods train to Leominster, which departed about an hour after the service that still operates. Two empty coaches were attached next to the guard's van, and these were used subsequently to form the 6.5 p.m. passenger train to Kington. The same engine then worked another passenger train to Leominster and back, reaching Kington about 9.45 p.m. On Saturdays the second goods did not run, and the engine and two coaches worked a passenger train to Leominster about 1.45 p.m.

As at present, there was only the one daily goods from Leominster, although the 12.45 p.m. to New Radnor used to run as a "mixed" train. The midday trip to Presteigne and the afternoon trip to Eardisley were also "mixed" trains, and handled all normal freight on these branches, although if traffic was exceptionally heavy on the Eardisley branch, the engine booked to work the second goods to Leominster would clear the branch traffic first.

In the late 1920's, these branches were the preserve of 0-4-2 tanks Nos. 533, 834, 1424, 3573 and 3574, 2-4-0 tanks Nos. 464 and 1497. In the early 1930's these were gradually ousted by Collett 0-4-2 tanks Nos. 5807, 5808, 5814, 5815 and 5817. Apart from a very occasional "Dean" prior to the second World War, the goods trip from Leominster has always been worked by a pannier.

I visited New Radnor station at the end of September last and found the track was still *in situ* and in quite good condition, although I later discovered that the rails had been removed just beyond Dolyhir station.

Welwyn Garden City. J. S. WHITING.

SIR,—Mr. Bannister perpetuates the old error that the Leominster-Kington section was opened on August 2, 1857. May I point out that the formal opening took place with due celebration on July 27 and that public traffic started on August 20? Both dates are fully confirmed in the Company's minute book and contemporary newspapers.

Rugby. C. R. CLINKER.

The Southern "Schools"

SIR,—I read with interest Mr. Cecil J. Allen's article "In Praise of the 'Schools'" (February issue), but would point out that the "5.4" is actually 5.6, and is allowed 47½ min. to Tunbridge Wells Central and not 48 min., like the slightly lighter 6.3. Moreover, he saw in 1950 a run of mine with the 5.6—engine No. 30900, Driver Bond, load 358/385 tons—which in all the comparable sections was better than the "Man of Kent" run he quotes as overshadowing mine. Furthermore, if gradient posts are correct, the "¼-mile at 1 in 53" out of Tonbridge is followed by a roughly equal length of 1 in 47, and also included in the 3½ miles he mentions are 1 in 80, 1 in 75, 1 in 72 and 1 in 80 gradients, so that "round about 1 in 100" seems a slight understatement. Incidentally, milepost 32 is on the 1 in 72 and not 1 in 188 gradient, which does not appear on any of the gradient posts.

Southborough, Kent. F. S. BOND.

Overloaded Tenders

SIR,—Special thanks for the March issue; I find it to be of quite exceptional interest.

For a personal reason, the illustration on p. 128 is the high-light. Before 1939 I wrote to the authorities of one of the railway groups drawing attention to the danger of loading tenders with coal to well above the height of the cab roof and therefore fouling the loading gauge. (A man had in fact been badly injured by coal knocked off a tender by a bridge.) The official reply was that this could not possibly happen because of the construction of the coaling plant. More recently someone was officially asked "on what authority" he had said that tenders were often loaded well above cab-height. Perhaps it is held that observation is not evidence.

Overloading to the extent shown in the picture of No. 60014 is not unusual and suggests that every coaling plant be fitted with a fixed loading gauge designed to trim the coal down to the safe limit as the tender moves away. Or is it already usual to check the height in any way?

Sheffield, 10. W. A. TUPLIN.

MOTIVE POWER MISCELLANY

LONDON MIDLAND REGION

Western Division

Diesel No. 10203 reappeared on the Western Division in March and on March 5 was noted on the 8.50 a.m. and 5.50 p.m. Euston-Wolverhampton (not the 6.55 as before), 1.55 p.m. back and the usual night parcels from Birmingham to London. Then, on March 11, it took over the down "Royal Scot" and the 9.25 p.m. night sleeper from Glasgow throughout between London and Clydeside. This is the most arduous duty yet worked by a single-unit B.R. diesel, and by the end of the month No. 10203 had missed no more than a couple of possible trips. A reader who rode behind it on March 19 from Crewe to Carlisle reported it to be complete master of the "Royal Scot" job. With a 10-coach load of 344 tons tare, Shap summit was surmounted at a minimum of 35 m.p.h., and the 141.1 miles were run in 145 min. 20 sec., or 139¼ min. net, allowing for p.w. checks at Wigan and Shap, and signals at Farington Curve Junction.

Nos. 10201/2 were still working double-unit on the up "Royal Scot" and the down Glasgow sleeper until March 20, when they were missing from the up "Royal Scot." Before No. 10203 took over its new job the down "Royal Scot" was seen leaving London with the powerful combination of "Scot" No. 46163 and Pacific No. 46247 on March 9 ; oddly, on March 23 the same pair brought the up "Royal Scot" into Crewe, where No. 46163 was removed. The "Deltic" diesel returned to its makers early in March for modification.

March 9 was also the occasion of a women's hockey international at Wembley. From the S.R. Pacifics Nos. 34066/87/90/1 (73A) and 34046 (75A) brought excursions to Wembley Central, and Nos. 34087/91 took their trains on to Watford Junction for stabling and to turn themselves on the Croxley triangle ; later they were followed through Hatch End by No. 34066 running light. Several excursions from the Midland Division came up the main line to Wembley and produced Leicester Caprotti "5" 4-6-0s Nos. 73142-4 (two of them with Stanier "5" 4-6-0 pilots) and No. 73068 of Derby, while Nos. 44666, 44841/88 and 45265 came from Saltley. More unusual motive power combinations noted in March were "2P" 4-4-0 No. 40631 (10B) and Pacific No. 46229 (1B) on the 10.40 a.m. Euston-Windermere on March 16 ; "Jubilee" No. 45624 (9A) and Pacific No. 71000 on the 11.5 a.m. Euston-Carlisle next day ; and "Patriot" No. 45548 (5A) and "Scot" No. 46136 (12A) on the down "Comet" on March 23. On this last date 2-10-0 No. 92101 (18A) was seen in Euston taking the stock of the 9.42 a.m. Birmingham relief arrival out to Camden ; this train now appears to be a Saturday fixture, and is worked usually by a "5" 4-6-0 from the Bescot district which returns piloting the Camden Class "6" or "7" 4-6-0 booked for the 11.30 a.m. Euston-Birmingham two-hour train.

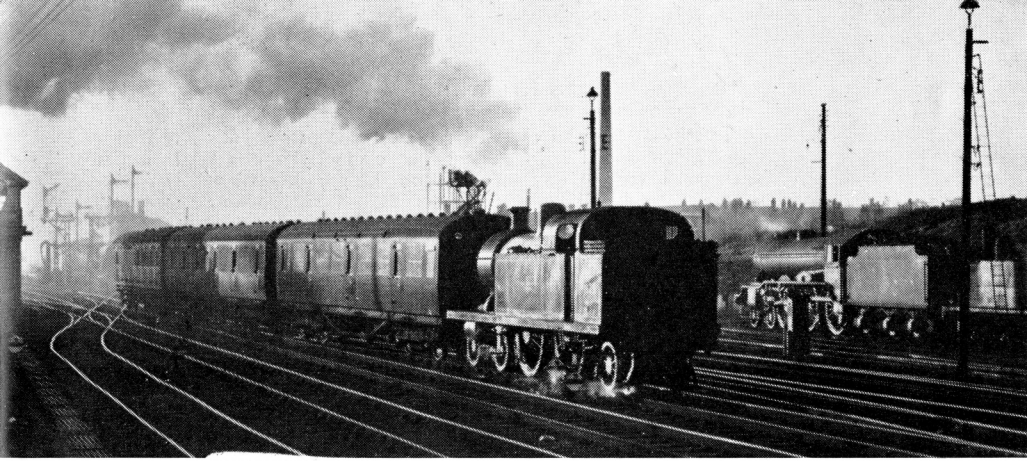
On March 10 "Jubilee" No. 45722 had emerged from Rugby Test Plant and was in the nearby works ; appearances suggested that its twin stovepipe was to be replaced by a normal chimney before it re-entered service. It is believed that a standard 2-10-0 was to follow it on the Test Plant. Our correspondent remarks that locomotives from considerably distant sheds were receiving attention at Rugby that day—for example, Nos. 48396 (19C) and 44966 (22A). The morning Glasgow-Birmingham train arrived in New Street on March 12 double-headed by Pacific No. 70047 and "Patriot" No. 45507.

Midland Division

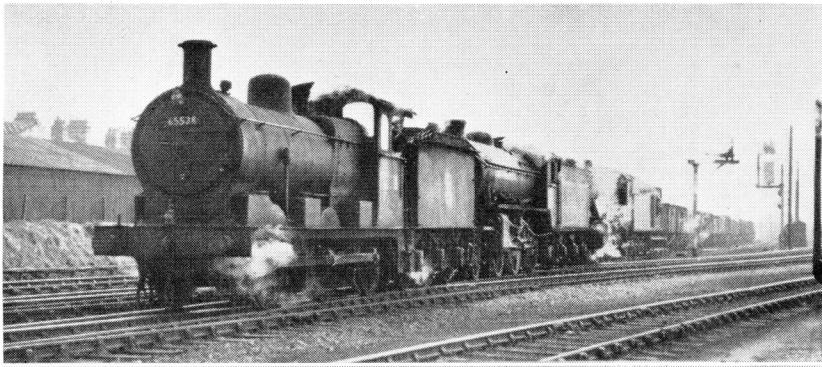
Some "D16" 4-4-0s of Cambridge shed have been moved to Lincoln. On March 18 No. 62571 brought the 12.12 p.m. from Derby into Nottingham (Midland), this train being part of one of the two Lincoln "D11" 4-4-0 diagrams that were set out in full on page 571 of our November, 1956, issue, and from then on until the end of the month the 4-4-0 was regularly reported in Derby. The Fell diesel, No. 10100, is in action again, painted green and lined out, and on March 12 and 13 was seen on the 1.51 p.m. arrival in Manchester (Central) from Derby and the 2.50 p.m. back, both of which are stopping trains. In the following week the 825 h.p. diesel No. 10800 also reappeared, and was noted on the same turn on March 19 and 20. At Derby work was in progress in March on standard Class "5" 4-6-0s Nos. 73150-4, which are reported to be the last steam locomotives to be built there ; the Lickey banker 0-10-0 is still intact. A Stanier 0-4-4 tank, No. 41900, has been transferred to Gloucester and is believed to be on the Tewkesbury branch.

The North-West

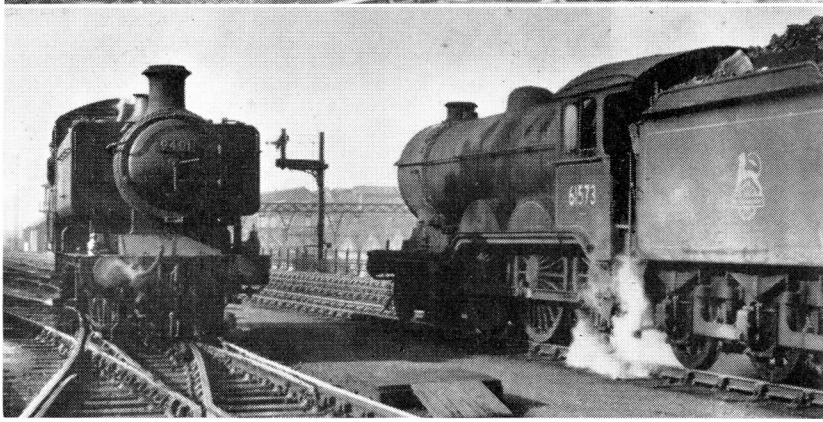
On March 3 the M.S.J. & A. electric service was suspended during the morning owing to engineering work at Timperley and diesel railcars were working the line One of the Northwich "D11s," No. 62669, has recently survived an overhaul and been repainted—but in plain, not lined black,



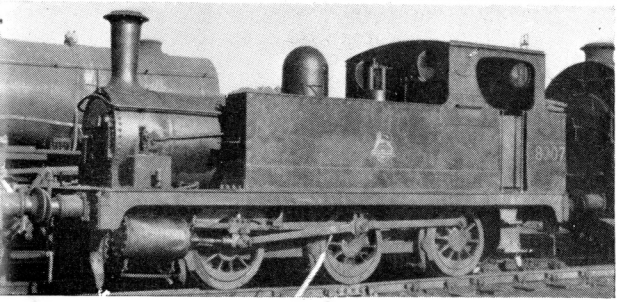
Above : Tilbury 4-4-2T No. 41975 leaves Colchester with the 5.10 p.m. to Clacton on October 6, 1956.
[*R. C. Riley*



Right : By-product of a derailment at Elsenham on February 27, 1957, was the appearance at Cambridge from the south of this triple-headed freight. The engines are "J17" 0-6-0 No. 65538, "K1" 2-6-0 No. 62018, and "WD" 2-8-0 No. 90079.
[*J. A. Coiley*



Right : Strange companions at Bethnal Green—W.R. 0-6-0PT No. 9401, on loan to Stratford shed, and Class "B12" 4-6-0 No. 61573.
[*R. C. Riley*



AN EASTERN MISCELLANY

Left : No. 68207 was one of the "J63" Class, the last of which has recently been withdrawn. Designed by J. G. Robinson, seven of these engines were built for Great Central shunting work between 1906 and 1914. They were the last of a comparatively small line of 67 0-6-0 shunting tanks owned by the G.C.R. [*D. Penney*

unfortunately. A turn usually dealt with by a Northwich "Director" or 2-6-4, the 7.20 a.m. Northwich-Manchester (Central), was in varied hands in the second half of March—double-chimney "5" 4-6-0 No. 44765 (5A) on March 12 and 14, standard "5" 4-6-0 No. 73031 (17A) on March 13, compound No. 41150 (17F) on March 18, 20-22 and 25 and "5" 4-6-0 No. 44753 (53A) on March 19, amongst others. Instead of the usual L.M. 2-6-2 tank from Wrexham, the 6.35 a.m. Chester (Northgate)-Altrincham on March 4 was worked by standard Class "3" 2-6-2 tank No. 82002, devoid of shedplate but last heard of at Treherbert.

In brief

A new diesel unit on trial on the Cockermouth, Keswick & Penrith line is powered by two Rolls-Royce diesel engines of 200 h.p. apiece, as against the total of 300 h.p. put out by the engines of the other twin-units providing the service; the newcomer is numbered E50000 and E56000. Lower Darwen shed has acquired standard Class "4" 2-6-0s for the first time; Nos. 76080/1, both newly completed, have been allocated to it.

(For L.M.R. information we are indebted to Messrs. J. A. Fuller, C. D. Boyce, A. E. Jennings, L. Cazin, G. E. Trinick, D. S. Armstrong, J. G. Brown, G. E. Jones, E. R. Batty, M. Atkins, J. M. Scott, P. J. Plater, G. Sims, J. A. Newton, J. Hill, J. W. Reeve, L. Salmon, A. M. Howe, R. Maple, J. L. Whalley, S. Marshall, A. W. Marten, R. M. Williams, A. W. & D. J. Fitch and V. Birkhead).

EASTERN REGION

G.N. Section

March saw Kings Cross shed somewhat pressed for power owing to a succession of failures and the absence of an unusually large number of its engines at Doncaster for periodical overhaul. So for some days New England loaned "A2s" Nos. 60504/20 to Kings Cross. No. 60520, fresh from repair after its Welwyn derailment, was noted on the 6.5 p.m. Kings Cross-Leeds on March 8 and the 10.35 a.m. Leeds-Kings Cross on March 17, a Sunday when Leeds-London traffic was diverted from Wakefield via Pontefract and Knottingley owing to engineering work on the direct route to Doncaster. Another New England "A2" took a 34A express job on March 13, when No. 60505 was put on the down "Yorkshire Pullman" in place of "A1" No. 60157 at short notice ; at Doncaster the "A2" had to be removed owing to reversing gear trouble. We learn that the suggestion in our March issue that Gateshead put a "V2" on the up "Talisman" on January 16 was incorrect ; the train left Newcastle with "A4" No. 60019, which failed at Rossington with a hot driving axlebox and was there replaced by the "V2," No. 60952. The "V2" is believed to have kept the schedule from Rossington to London, all the delay we reported occurring at Rossington. There was evidently a down "Talisman" failure on March 18, when "V2" No. 60897 took the train through Peterborough at 5.37 p.m. ; the 3.52 p.m. Kings Cross-Leeds was allowed through to Peterborough ahead of the "Talisman" that day. Increasing use is being made of Cambridge's enlarged stud of "B12" 4-6-0s on the buffet trains to Kings Cross. On March 4 No. 61575 was noted on the 3.15 p.m. from Cambridge, which is of interest because the balancing turn is the 5.52 p.m. Kings Cross-Cambridge and Peterborough. This latter is still a heavy 11-coach load, but the "B12" would have had to tackle it single-handed, for the New England engine which used to double-head as far as Hitchin and then take on the Peterborough portion now goes ahead as pilot, usually to a Kings Cross "L1," on the 5.39 p.m.

In the first week of March York shed began using one of its new standard "5" 4-6-0s, No. 73162, on the 10.15 a.m. York-Lowestoft as far as Lincoln ; there the outward leg of the diagram ends, the engine returning home at 2.38 p.m. on the 10.10 a.m. Yarmouth-York. Previously a "B1" or "B16" has been York's usual choice for the job. Ex-works, Ferryhill "A2" No. 60532 was on Lincoln shed on March 1. In the first week of March an unusually large number of Ivatt Class "4" 2-6-0s were observed in the Lincoln area, heading coal trains over the Greetwell Junction-Pyewipe Junction avoiding line ; probably like No. 60532, ex-works, the engines seen included Nos. 43075 (52B), 43117 (55A), 43103 (53A) and 43141 (64E). At Doncaster on March 24 new standard "5" 4-6-0 No. 73166 was in the paint shop and work was in progress on Nos. 73167-70.

G.E. Section

Colchester's three Tilbury 4-4-2 tanks, Nos. 41936/49/75, have now departed and have arrived at Southend Victoria, where they have been stored. Diesel multiple units have been running crew-training trips between Stratford, Hertford and Bishops Stortford and on March 4 a twin-unit was seen on the Chingford branch. On March 2 "B1" No. 61375 worked through from Ilford to High Wycombe via Stratford, South Tottenham and Acton Wells with a football excursion.

The G.C. Section

As usual, the women's hockey international at Wembley on March 9 attracted an assorted parade of motive power to Wembley Hill and Stadium stations. From Norwich via Ely, Bishops Stortford, Tottenham, Gospel Oak and Neasden Midland Junction came a train behind "B1" No. 61317 (32A), followed from Ely by another consisting of Wisbech East and

Kings Lynn portions headed by "B17" No. 61638 (31B); other G.E. section visitors noted at Neasden that afternoon were "B12" No. 61537 (32B) and "B17" No. 61650 (30E). Specials from the north seen travelling up the G.W.-G.C. Joint line to Northolt Junction produced, amongst others, "A3" No. 60048 (36A), "V2" No. 60870 (36A) and "Bls" Nos. 61065 (50B), 61009, 61152/6 (41A). W.R. engines bringing excursions to Wembley Stadium via Acton, Acton Wells Junction and Neasden were "Halls" Nos. 4958 (82A), 6968 (81D), 6917 (85B) and 6989 (85A), which worked their stock to Sudbury & Harrow Road, Sudbury Hill or West Ruislip for stabling and then ran on light to Denham troughs to take water ; after that they reversed, turned on the loops at Greenford, and returned to the stabling points for their homeward workings. Other "Halls" reported in the Neasden area that day were Nos. 5910 (82A), 5951 (85B) and 5968 (84G) while the Southern sent three "Schools" with excursions—Nos. 30909 (74E) and 30913/4 (74B). Another unusual sight on March 9 was "B16" No. 61449 (50A) taking the down "South Yorkshireman" out of Marylebone. Bletchley shed has now taken over the working of all the parcels trains between Marylebone depot and the L.M. Western Division main line ; this means that an L.M. engine, usually a "5" 4-6-0, now works the 9.45 p.m. (SX) Marylebone-Preston and the 9.26 p.m. (MSX) Bletchley-Marylebone via the G.W.-G.C. Joint line.

The transfer of 2-10-0s to the G.C. section has been continuing and no fewer than 21 of these engines are now concentrated at Annesley, most of them coming from Doncaster, where they have been replaced by "WD" 2-8-0s. One move in the big switch of freight engines between March, Annesley, Doncaster and some other sheds which has been proceeding in recent weeks took three "K3s" to Mexborough ; a correspondent reports that they are engaged on a two-day working, with one 2-6-0 spare, covering the 10.45 a.m. Frodingham-Annesley Class "J," 6.40 p.m. Annesley-Woodford Class "H" and 11.50 a.m. Woodford-Frodingham Class "H" freights. A Cleethorpes reader draws our attention to another interesting freight working in ex-G.C. territory—the 4.48 p.m. fish from Grimsby New Docks via Barnetby, Market Rasen and Lincoln to Nottingham ; an L.M. "4F" 0-6-0, usually from Nottingham shed, appears at Immingham every day for this working.

(For E.R. information we are indebted to Messrs. J. C. Atkinson, H. C. Medcalf, V. Robinson, G. Tweedie, R. N. Curd, A. F. Ellis, W. N. Kent, D. F. Matthews, T. G. Rawling, J. Slatford, B. J. Holyland, E. P. Tromans, A. J. Jones, A. W. Russell, H. Leah, G. B. Wallis, R. J. Humphries).

NORTH EASTERN REGION

From the passenger point of view the Carlisle-Newcastle line is now practically dieselised, for the only trains still steam-worked, usually by "B1s," are the 12.30 a.m., 12.20, 5.20 and 10.10 p.m.(SO) from Newcastle to Carlisle and the 2.32, 7.20 a.m. and 2 p.m. in the reverse direction. Timings have been considerably improved, and the Newcastle-Hexham journey can now be made in 31 min., the Newcastle-Carlisle run, with two stops, in 87 min. ; eastbound, the Carlisle-Newcastle trip takes 90 min. with five stops and some trains are timed from Hexham to Newcastle in 28 min. Both Metro-Cammell and Derby-built units are in use, the former four-car, the latter two-car sets. The Derby vehicles running on this line are those received in late 1955 in preparation for the Newcastle-Middlesbrough diesel services. The Metro-Cammell units, however, are new and appear to be allocated to South Gosforth car sheds solely for the Carlisle line. The allocation of diesel cars to South Gosforth has now reached a total of 56 cars (28 motors and 28 trailers); while in addition units for use on the Darlington district diesel services are being temporarily housed there until their depot at Darlington is completed. Since these Darlington vehicles arrived at South Gosforth they have been noted on occasions working on the Newcastle-Carlisle line, presumably to cover sets undergoing periodical examinations. The diesel drivers on the Carlisle route are from Gateshead, Blaydon and Hexham depots. The Gateshead men who operated the Middlesbrough diesel services have had to undergo further training on the Metro-Cammell units, as there is a slight difference in the driving controls as compared with the Derby units.

The career of standard Class "5" 4-6-0s Nos. 73160/1 in the N.E.R. does not seem to have been happy so far. As reported last month, after trial from Blaydon shed on various freight diagrams, including Blaydon to Shildon and Addison to Carlisle (and failure on the latter due to their inability to use the Carlisle turntable that had coped successfully with "K1s"), they moved to Gateshead. This depot used them on Class "C" freights from Park Lane to the south and parcels trains between Newcastle and York, but by the beginning of March their appearances on fitted freights were becoming rare; it appears that while, from the running point of view, they were matching the work of a "V2," their lower loading group was making it necessary to reduce either the classification or the load of the train they were turned out to work. Nos. 73162-5 are now at York, and at least one job seems to have been found for them (*see E.R. column*

above). A number of Ivatt Class "2" 2-6-0s are being overhauled at Gateshead ; recent visitors have included Nos. 46408/64/81.

The second phase of the Hull diesel scheme was introduced on March 4 and completed dieselisation of the Hornsea and Withernsea passenger services. The diesel units are still being stabled at Springhead until Botanic Gardens shed has been reconstructed. Apart from two Metro-Cammell four-car units on loan from the Newcastle area, the Hull units are all Cravens-built; of the latter the latest to be delivered have a glass-fronted letter-code panel, similar to that on the Swindon-built inter-city units, below the driving cab windows, and covers for the headlamps, which have been lowered to a position just above the bufferbeam. For a fortnight in March, Neville Hill "A3s" resumed their appearances at Hull to work the morning train to Liverpool, but "B1s" then displaced them again.

(For N.E.R. information we are indebted to Messrs. A. Perks, K. J. Yates, J. Deighton, D. Trout, K. Raine, A. F. Butler, N. S. Reay, D. Smith, P. J. Taylor and J. C. Atkinson).

WESTERN REGION

More green Standards

New wearers of the green reported by a visitor to Swindon on March 17 are Class "2" 2-6-0s Nos. 46509 and 78006, both fully lined out, as was 0-6-0 No. 3206 (the first of the latter type to be given this treatment—No. 2207, by Newton Abbot—was noted on duty at Cheltenham in the second week of March during the Royal visit to the races there). Pannier tank No. 6430 was observed in unlined green livery at Newport at the end of February, and 0-6-2 tank No. 6659 was in Caerphilly Works yard in unlined green on March 4. Somewhat oddly, No. 4702, one of the big mixed traffic 2-8-0s, was still in black when it was outshopped from Swindon in March. The restored 4-4-0 *City of Truro* worked the 11.13 a.m. Bath-Swindon, a works running in turn, on March 25 ; reports say it has been shedded at Didcot and will work regularly on the D.N. & S. line when not required for special excursions.

Construction of Swindon's first three main line diesel-hydraulic locomotives has begun, but on March 17 the parts were screened from prying eyes by tarpaulins closely guarded, we hear. No. 18000, the Swiss-built gas turbine, was still in the Works as a result of new mechanical trouble ; it is now over a year since this machine was last in service. The latest engines to emerge from the Works with double chimneys are "Kings" Nos. 6021/5, "County" No. 1016 and "Castle" No. 4090 ; the other double-chimney "Castle," No. 7018, was working with a coal-weighing tender in March. Following the Inspecting officer's criticisms after the Milton accident of the lookout from "Britannias," W.R. Pacifics are appearing with the handrails removed from their smoke deflectors and replaced by handholds cut into the shields. Another pannier tank, No. 5752, has been transferred to the L.T.E., which is likely to replace all its existing steam service locomotive stock as they become due for new boilers with engines of this type ; the pannier tanks are reported to have proved more suitable to L.T.E. needs than the other B.R. types that have been tried by them in recent months.

The London area

An odd working occurred on March 8, when "King" No. 6001 failed at Park Royal on the 7.25 a.m. Wolverhampton-Paddington. Sister engine No. 6002 was in the neighbourhood on trial light after repair, and the train was therefore drawn back to Greenford so that No. 6002 could be attached tender-first at the front end and bypass the failed engine by taking the West Ealing route into Paddington, reached 80 min. late. (Odder still, though rather outside the topics of this column, was the appearance of the "Talisman" rear vestibule shutter on the back of the 11.10 a.m. Paddington-Birkenhead on March 12 !).

Petrol rationing has caused the load of the Friday up "Bristolian to swell to 10 coaches, but we understand that its schedule is lengthened to two hours in such circumstances. Several Friday departures from Paddington —the 1.55, 3.55, 4.15, 5.30 and 6.30 p.m. —are regularly running in two parts, while the 5.55 has been split into three, forcing cancellation of the 5.40 p.m. local train. The Friday up "Merchant Venturer," too, has been divided. On March 8, owing to last minute "King" defect, "Castle" No. 5087 took out the down "Cornish Riviera Limited." The Royal special from Paddington to Cheltenham races on March 13 was headed by "Castle" No. 5035, in immaculate condition. A new Ruston & Hornsby diesel-mechanical 0-4-0, numbered 20 in W.R. service locomotive stock, is operating in Reading signal works.

The Midlands

A collision near Leamington completely blocked the London-Birmingham main line on February 25 and until the arrival of the 2.10 p.m. from Paddington, by which time one track was open again, all traffic had to be diverted. The 9.0 and 9.10 a.m. from Paddington were routed out of London via High Wycombe and then through Thame to Oxford, but other traffic reached Oxford via Reading and Didcot ; for all trains the route then lay via Kingham, Honeybourne and Hatton. The Honeybourne junctions are again in the news now, for the Stratford-

on-Avon-Cheltenham main line was closed for engineering work near Broadway from March 18 to May 25, forcing the "Cornishman" and the 3.45 p.m. Birmingham (Snow Hill)-Swansea and its balancing service to travel from Honeybourne to Worcester (Shrub Hill), there to reverse via Abbots Wood Junction on to the Midland main line to Bristol. A Worcester engine works the "Cornishman" over the Midland between its home town and Bristol and in the first week of the diversions "Halls" Nos. 5981, 6989 and 7920 and "Castle" No. 7013 were employed. A bus service is bridging the gap in the closed route for local traffic between Honeybourne and Cheltenham. The Cambridge "B12" 4-6-0s have introduced themselves to Oxford, for they have ousted "D16s" from the morning train through from Cambridge and the 2.28 p.m. back ; a "D16" has not been seen at Oxford since early February, but sometimes Class "4" 2-6-0 No. 43089 appears instead of the "B12s," of which Nos. 61546/9/58/67/73/5/6 have so far been reported at Oxford. An L.M. engine now appears regularly at Didcot. Saltley has a new freight turn to Hinksey yard, after which the engine runs on to Didcot to turn on the triangle before taking on a return freight from Hinksey ; a Class "5" 4-6-0 is the usual performer, and Nos. 44804/41, 45272 (21A), 45264 (17B) and 45297 (19B) had been observed on this duty up to the end of March.

In brief

Some goods wagons were derailed at Ludlow on March 15, and although most North-and-West route trains were held until a track was cleared, it is believed that *Britannia* No. 70029 on the 3 p.m. Liverpool-Plymouth was diverted from Shrewsbury to Hereford via Wolverhampton (L.L.), Stourbridge Junction, Worcester (Foregate Street) and Great Malvern. . . . A "47XX" 2-8-0, No. 4705, has been allocated to Laira. . . . A rare sight as far west as St. Erth on March 9 was one of the 2-8-0 tanks St. Blazey has for china clay traffic, No. 4206.

(For W. R. information we are indebted to Messrs. C. W. Portch, M. Hedges, J. M. Craig, J. T. Dean, M. G. Webb, R. Ashley-Carter, J. Moody, P. J. N. Vernon, P. H. Rees, B. R. Dyer, D. T. J. Rollason, R. Thomas, C. J. Appleby, P. Lear B. Carpenter, R. W. Golder, "Devonian" and Rev. M. Langley).

SOUTHERN REGION

Western Section

Two special trains were run from Manchester (London Road) to Bournemouth for the F.A. Cup-tie on March 2 and they were taken over at Mitre Bridge, on the West London line, by standard Class "5" 4-6-0s Nos. 73111/5 (70A) ; No. 73111 duly worked one return train from Boscombe, but the other was hauled by Pacific No. 34040 (71B), both engines working through to Willesden Junction in this direction. There was a rare appearance of a Class "C" 0-6-0 on the Western Section main line next day, when No. 31033 (73C) was seen on the 11 a.m. Romsey-Stewarts Lane freight, the return working of the previous day's 9.20 p.m. departmental train from Stewarts Lane ; sister engine No. 31688 (73C) was on the same job on March 10. "N15" 4-6-0 No. 30456 (70A) travelled the little-used Sturt Lane West Curve at Farnborough on March 4 when it worked the 11.44 a.m. Camberley-Salisbury and 5 p.m. back, a return special organised for R.M.A. Sandhurst cadets. Owing to engineering work on the main line, Class "5" 4-6-0 No. 73117 took the 7.3 a.m. Southampton Dock-Waterloo via Alton and the mid-Hants line, No. 73115 went this way with the same train the following Sunday, and so did No. 73110 on March 24; on March 23 yet another of the type, No. 73111, went through Alton with the 8 a.m. *Empire Fowey* troop train from Southampton Docks to Waterloo. The latest "Merchant Navy" rebuilds are Nos. 35012/23; No. 35012 was seen at Nine Elms on March 9 and worked the 3.20 p.m. Waterloo-Weymouth on March 13, while No. 35023 (72A) left Exeter on the 4.35 p.m. Exeter Central-Southsea stopping train, now normally an Exmouth Junction "S15" turn, on March 2. Another "U1" 2-6-0 has been to Exeter ; on March 5 No. 31898 (73A) headed the 8.50 a.m. up stopping train out of Central station. According to a correspondent, the last "N15X" 4-6-0, No. 32331, makes its final journey on a London Bridge-Windsor excursion on June 23. We hear that Dorchester sub-shed is to be closed. For some time it has had no permanent allocation and acted merely as a stabling point for S.R. engines on Weymouth workings, but they will now use the W.R. shed at Weymouth.

At the beginning of March standard 2-6-4 tank No. 80146 (75A) was working on the Reading-Redhill line. On March 1 it was employed on the through South Coast-Birkenhead express, usually a standard Class "4" 2-6-0 turn (but dealt with by "U1" No. 31904 on March 4 before a Class "4" was next seen on it), and on March 3 the 2-6-4 headed the 7.33 a.m. and 5.5 p.m. Redhill-Reading South, and the 11.50 a.m. back. On March 24 the 11.32 a.m. Redhill-Reading South was double-headed by Class "4" 2-6-0s Nos. 76054/5.

The Hastings diesels

More news is to hand of the diesel-electric multiple-units that are still undergoing trials preparatory to regular service on the London-Tunbridge Wells-Hastings

route. We learn that the designers have managed to provide, within the special limits of the loading gauge on this route, first class compartments seating three a side, as against two in the old Hastings corridor stock, and two each side of a central gangway in the open second class saloons, compared with three a side in the compartments of the former steam stock. Each six-car unit weighs 228 tons tare—54 tons per motor coach, and 30 tons per trailer. Further evidence of the units' powers of acceleration was demonstrated in late February, when No. 1001 was on trial between Ashford, Tunbridge Wells and Hastings and was seen to accelerate to 55 m.p.h. from a standing start at Stonegate, on the climb up to Wadhurst ; the gradients on this climb range mainly between 1 in 75 and 1 in 132. In March one of the units was making a daily trip from Bexhill West to Cannon Street and back, stopping at all stations between Bexhill and Tonbridge, and then at Sevenoaks and London Bridge only. The schedule allowed 68 min. to Tonbridge, including stops, 11½ min. thence to Sevenoaks, 28 min. on to London Bridge, and 112½ min. in all from Bexhill West to Cannon Street. In the down direction the schedule omitted the London Bridge stop and the unit was timed to Sevenoaks in 27½ min.

Eastern section

With the impending closure of Brighton works, the breaking up of locomotives has been stopped and some engines awaiting the hammer have been transferred to Ashford; first to go were three "0395" 0-6-0s, which were scrapped at Ashford at the end of February. The latest 2-6-0 conversion at Ashford are Nos. 31405/8, but Nos. 31626 and 31864 passed through the Works without alteration.

(For S. R. information we are indebted to Messrs. C. R. Berridge, A. C. Gilbert, V. E. Bowern, P. K. Wyeth, R. J. Drewett, D. Turnock, J. Richards, M. S. Kington, A. McBlain, C. A. Bassett, D. Page. D. L. Bradley, R. R. May, R. L. Ratcliffe and G. C. Wright).

SCOTTISH REGION

A visitor to Aberdeen on February 28 was Eastfield "K4" 2-6-0 No. 61996, which took out the 4.40 a.m. goods to Dundee. Also reaching Aberdeen in March were Motherwell "WD" 2-10-0s on coal trains from Thornton to Craiginches down yard ; they returned south with empties from Guild Street goods depot. The first Caprotti Standard "5" to be seen at Aberdeen was No. 73145 of St. Rollox on March 7, bringing in the 8.15 a.m. from Glasgow (Buchanan Street) and returning on the 6.10 p.m. from Aberdeen ; Nos. 73146-8 were later noted on the same turn. Two more "J35" 0-6-0s, Nos. 64464/77, have been allocated to Polmadie.

LOCOMOTIVE STOCK CHANGES

"N.Y.A." denotes "not yet allocated" (on official lists received). This list is correct to the following dates : L.M.R.—February 23, 1957 ; E. & N.E.R.—March 16, 1957 ; S.R.—February 16, 1957 ; W.R.—January 26, 1957.

NEW ENGINES

Diesel Mechanical 0-6-0 : 11164/5-41A ; 11186-40A ; **Diesel Electric 0-6-0 :** 13336-41A ; **Class "5" 4-6-0** ; 73146-65B ; 73147-N.Y.A. ; 73163/4/5-50A ; **Class "4" 4-6-0 :** 75076-N.Y.A. ; **Class "4" 2-6-0 :** 76079-10D ; 76080/1-24D ; **Class "9F" 2-10-0 :** 92095-38B ; 92120-18B ; 92121/2-15A.

ENGINES WITHDRAWN

43, 1415, 2027, 5401, 5512, 5808, 40458/86, 41699, 41753, 43259, 43463, 43912/92, 47979/80, 49024/51, 49657/64, 51500, 52499, 52576, 54456, 56230/43/99 58299, 58306, 61735, 62514, 64303, 65078, 65250, 67209, 67318/37/95, 68159, 68210/66, 68826, 69316/56.

ENGINES REALLOCATED

London Midland Region : 12056-3C ; 12082-6A ; 13289/92/3-18A ; 13291-16A ; 40541-21B ; 40582-12A ; 41060, 41121-11E ; 41324-3C ; 41900-22B ; 42303/8-6A ; 42348-9A ; 42358-5D ; 42571-10A ; 42732-24F ; 42782-3A ; 42853, 42929-3D ; 42888-6C ; 42921-3A ; 42959/64-5B ; 43192-9B ; 43308-8B ; 43615/8-2B ; 43619-8B ; 43855-21B ; 44067-5F ; 44250-17E ; 44929/32-26B ; 45000/41/73, 45185-12A ; 45223/61-26B ; 45290-26A ; 45353-1A ; 45385-3D ; 45545-1B ; 45623-8A ; 45643-5A ; 45672-3B ; 45712-17F ; 46135/7-5A ; 46440-18A ; 47301/3-27A ; 47305, 47425-27B ; 48063-17D ; 48120-6C ; 48263-5B ; 49070, 49109, 49330, 49448-2A ; 49275-3D ; 51307/38/43/71-26A ; 51397-10D; 51474-24A ; 52270-26A ; 52393-10D ; 58157-2A ; 68714-6E ; 78040-27D ; 80063/86-6C ; 90102-27D; 90413, 90556-24C.

Eastern Region : 11180-40B ; 60877-34A ; 61001-32B ; 61042-32A ; 61060/74-35B ; 61095-35C ; 61164/82, 61279-30A ; 61272-38B ; 61323/48-35C ; 61554/8/67/73-31A ; 61804/38-38A ; 61805/30-35A ; 61831-31B ; 61970-32A ; 63571/9/90/6, 63619/30/46/50/63/78, 63725/46/73/86/95/6, 63803-31B ; 64296, 64376, 64404-36D ; 64314-40E ; 65506/14-30A ; 65557-32A ; 65588-32G ; 67761-34D ; 67786-38A; 68520-36A ; 68628-32C ; 69261-40E ; 69322-36E ; 69621-32C ; 69821/4/6/9-40B ; 69822-39A ; 90108/19/44, 90203/55, 90453/69/91, 90537/8/50/67/9, 90602/8/36/96, 90732-36A ; 92067/8/9/70/1/2/3/4/5/6/87/8/9/90/1/2/3-38B.

North Eastern Region : 41251-56A ; 60038-52A; 60071-51A ; 61854/7/97-53A ; 65870-51D ; 67280, 67311-53B ; 67323-52F ; 67433/8-56B ; 67763/5-51D; 68262-54B; 69457-56C; 69877-50F; 43054-51K.

Scottish Region : 1646-60C ; 47536-66D ; 55240-68C ; 56281-63B ; 61242-61A ; 64464/77-66A ; 68350-62C ; 69510-64G ; 73145-65B.

Western Region : 390-88A ; 1433-82A ; 1465-84F ; 1615-87F ; 2841-84E ; 3811-84K ; 3845/54/60-86C ; 4146-84E ; 4293-87B ; 4574-83F ; 4610-88C ; 4705-83D ; 4901/13-84B ; 4928-81E ; 5001/52/74/99-81A ; 5002-82C ; 5005-83A ; 5020/49-83D; 5080-87E ; 5391-84E ; 5403-82A ; 5413-85B ; 5545, 5622-88A ; 5626, 5728-88D ; 5789-86G ; 6650-87A ; 6978, 7020-81A ; 7022-83D ; 7422-84J ; 7756-87K ; 7824-83G ; 8413-81C ; 8732-87A ; 9405-81C ; 9455/86-85A ; 9499-82B ; 70021-86C ; 75002-82C ; 75026-89A. Diesel Railcars : 12-81D ; 16-81F.

SOUTHERN ELECTRIC UNITS

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ENGINE TRANSFERRED TO L.T.E

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SOCIETY COLUMN

THE RAILWAY DEVELOPMENT ASSOCIATION (MIDLAND AREA)

THE special Show arranged in Methodist Church Schools, Harborne, Birmingham, ended very successfully after being opened for two days in March. A crowded gathering was addressed by Councillor Kenneth Jackson, J.P., who stressed the inconvenience and inadequacy of the present road transport system to Harborne and the ever-growing districts around. He thought there was a strong case for extending the present Harborne Railway through the Green Belt area to join up with the Rubery and Hunnington branch, which would form another circular route and cater for the new and very populous centres, in a manner similar to the developments of London Transport. Councillor Jackson thought the time was ripe for those living in areas adjacent to the local railway, which still carries considerable mineral traffic, to begin petitioning for its reopening for passenger traffic, in view of what has been accomplished on the Sutton and Lichfield line with diesels, and also in other parts of the country where modern facilities have been introduced. The exhibition was greatly assisted by loans from British Railways, who did a splendid job with large models, including one of the diesel-electric engines Nos.10000 and 10001 and several others of modern passenger stock, and also by material from many locomotive, carriage and wagon and railway component manufacturers.

RAILWAY AND CANAL HISTORICAL SOCIETY

ON the morning of Saturday, May 4, members will visit the Railway Museum, York. In the afternoon, to mark the 300th anniversary of the first Act for improving the R. Ouse Navigation, a cruise by launch will be made from York to Naburn Lock, the headquarters of the Navigation, followed by a small exhibition at York of material relating to the river held in the city archives. This is being arranged by the City Librarian. In the evening the Society's Annual General Meeting will be held. On Sunday, May 5, a coach tour will be made from York, visiting the old viaduct at Tadcaster, constructed but never used for a Leeds-York direct line ; the old station at Milford Junction ; the Aire and Calder Navigation at Ferrybridge ; the site of the Heck and Wentbridge Railway, a little-known early tramroad ; and locks at Castleford. On Saturday, May 25, the West Midlands Local Group is organising a visit to the site of the Stratford & Moreton Railway between Stratford-on-Avon and Shipston-on-Stour.

STEPHENSON LOCOMOTIVE SOCIETY

THE Midland Area special North Staffs. rail-tour train will leave Birmingham (New Street), at 1.15 p.m. on Saturday, May 25. Six branches closed to local passenger traffic will be included in the route, which is via the Tipton-Wednesbury branch ; Walsall ; Norton-East Cannock mineral line ; Colwich, Stoke-on-Trent, Caldon Quarry branch ; Biddulph Valley line to North Rode, calling at Brunswick Wharf (Congleton) ; Leek ; Churnet Valley ; Burton-on-Trent ; and Lichfield. The train is due back in Birmingham at 9.25 p.m. Refreshments will be available. There will be a special fare for Lancashire participants detraining at North Rode, and applications for details of this, or for tickets from Birmingham, 21s. each, should be sent with remittance and stamped addressed envelope to S.L.S. Rail Tours, 16 Hutton Road, Handsworth, Birmingham 20. Non-members will also be welcomed as far as accommodation permits on the Society's "Chatham & Dover" special from Victoria, London, at 11.58 a.m. on Sunday, May 19, to Margate, thence to Shepherdswell via Ramsgate and Deal and back from Folkestone through Dover, Canterbury and the Catford loop to Holborn Viaduct, where it is due at about 7.32 p.m. The engine will be a rebuilt ex-S.E.C. Class "E1" or "D1" 4-4-0. There will be return journeys over the former East Kent Railway and Folkestone Harbour branch in charge of ex-S.E.R. engines. It is expected that the train will consist of open saloon stock with cafeteria car. Tickets, 28s., including detailed itinerary, can be obtained from J. S. Davies, c/o S.L.S., 32 Russell Road, London, W.14.

THE RAILWAY CORRESPONDENCE AND TRAVEL SOCIETY

THE East Midlands Branch rail tour, "The East Midlander No. 3," will run from Nottingham to York on Sunday, May 12. Departure will be from Nottingham (Midland) at 9.25 a.m. and the train will travel via Radford, Trowell, Treeton, Rotherham Masboro' (11 a.m.), Cudworth (11.25 a.m.), the Hull & Barnsley main line to Dairycoates, thence via Beverley and Market Weighton, to York, where the Railway Museum will be open. The return train will leave York at 4.35 p.m. via Church Fenton, Sherburn South, Gascoigne Wood, Selby West and Canal, Doncaster (5.41 p.m.), Tickhill, Shireoaks (6.58 p.m.) and Mansfield, arriving at Nottingham (Midland) at 7.50 p.m. Stops for photography will be made *en route*, and the motive power will be an ex-G.E.R. 4-4-0 of Class "D16/3." Dining car and cafeteria facilities will be available in both directions. Passengers requiring meals must so indicate when requesting tickets, but should not remit for these. Applications for tickets (adults 33s., juveniles 18s. 6d.), which must be accompanied by the appropriate remittances and stamped addressed foolscap envelopes, should be sent at once to the R.C.T.S., East Midlands Branch Sec., Mr. V. Forster, 90 Abbey Road, Beeston, Notts.

THE RAILWAY ENTHUSIASTS' CLUB

THERE were two exceptional visits during February, one to a long-closed London underground station, and the other to B.T.C. catering establishments in the London area. The Club's Annual General Meeting was held on March 16. Outdoor activities during May will include a visit to the Andover Traction Engine Rally on the 11th, a ramble over the old railway from Hurstbourne to Fullerton Junction on the 12th and on the 18th visits to signalboxes and brakevan trips in the East Grinstead-Lewes areas. On June 1 there will be a tour of Sheffield by special hired tramcar, including little-used spurs, curves and depot lines, and embracing trips to industrial systems and collieries in the area. The London area rail tour is scheduled for June 15. It will commence at Fenchurch Street at about 2 p.m. and end at Kings Cross, covering the Silvertown tramway, North Woolwich, little-used spurs in the Stratford area, Walthamstow, St. James Street, Cheshunt, Churchbury, Lower Edmonton Low Level, South Tottenham, the Palace Gates line and the Hertford Loop as far as Stevenage. Further details of these and other activities of the Club can be obtained from the Hon. Secretary, "Lynmouth," Sycamore Road, Farnborough, Hants.

TALYLLYN RAILWAY PRESERVATION SOCIETY

ON Saturday, March 23, the Chairman of the Midland Area, Major C. S. N. Walker, T.D., J.P., Assoc.Inst.T., presented to the Talyllyn Railway Company the 0-4-0 diesel locomotive *Midlander*. This engine was built by Ruston and Hornsby in 1940 (makers' number 200792/40) to 2 ft. 6½ in. gauge, and was used by Jee's Quarry, Nuneaton, until they turned over to internal road haulage. This quarry has been a fertile source of rail, which has been lifted and loaded by Society members led by Mr. Donald Gardiner of Coventry. On hearing that the concern were disposing of their stud of locomotives, Mr. Gardiner negotiated on behalf of the T.R.P.S. the purchase of the one in the best condition. The re-gauging to 2ft. 3 in. and the casting of the number plate have been carried out by local firms without charge to the Society ; the reconditioning and painting of the engine has been undertaken by members. Payment for the engine has been raised by the Midland Area, and transport to Towyn has been most generously provided free by Messrs. Caudle Ltd., Plant Contractors, of Birmingham. *Midlander* will be used for trains of ballast and other service duties.

LOCOSPOTTERS FIXTURES

THE NORTHERN RAILFANS CLUB

This Club's programme for late May and early June includes the following visits : **Saturday, May 11**—11A and 11B (Mr. Brown) ; **Sunday, May 12**—55F, 56E, 56F (Mr. Brown) ; **Sunday, May 19**—Coach tour from Gloucester to Cardiff and Newport (Mr. Hawley) ; **Saturday, May 25**—Derby Works and Coach Tour to 17B, 17C, 38C and 15C (Mr. Smith) ; **Sunday, June 2**—Crewe Works (Mr. Smith) ; **Saturday, June 8**—Horwich Works (Mr. Hawley) ; **Whit Sunday, June 9**—Overnight trip from Manchester to Glasgow and Edinburgh (Mr. Hawley). Party Rate Rail Travel.

S.A.E. for full details : Mr. C. B. Brown, 17 Glen View Street, Cornholme, Todmorden, Lancs. ; Mr. T. H. Smith, 380 Underwood Lane, Crewe, Cheshire ; or to the Club President, Mr. Ray A. Hawley, "Torview," Goostrey, Crewe, Cheshire.

Bournemouth Railfans (affiliated to the I.A.L.S.C.). This club has recently been formed to take over activities in West Hampshire and Dorset and is run by Mr. S. Cherrett, 93 Boscombe Grove Road, Bournemouth. The following fixtures have been arranged : **Friday, May 3 to Sunday, May 5**—Manchester and Crewe ; **Sunday, June 16**—Swindon Works and Shed ; **Friday, August 9 to Sunday, August 18**—Holiday Tour to Scotland, N.E. England, Midlands, etc. Particulars of membership and details of all forthcoming visits can be obtained from Mr. B. Panton, 129 Parkwood Road, Bournemouth.

The South Birmingham L.S.C. All spotters in the Birmingham area are advised to get in touch with Mr. Murray at the address below (no callers). Good programme of visits arranged including : **Sunday, May 5**—Crewe Works, 11 a.m. ; **Sunday, May 12**—Newport, Cardiff and Barry ; **Sunday, May 26**—Wolverhampton, Stafford, Wellington, Shrewsbury and Stourbridge ; **Sunday, June 2**—Crewe Works, 11 a.m. ; **August 25**—Eastleigh Works and Swindon Works. Engine "City of Truro." Fare ; Adult 21/6, under 16 10/9 ; **September 1**—Swindon Works and Shed. Engine "City of Truro." Fare 14/6, under 16, 7/3. All enquiries enclose S.A.E. to Mr. Murray, 177 Beaumont Road, Birmingham 30.

North London. A new club has been affiliated and is run by Mr. J. Wyndham, 16 Arlington Avenue, London, N.1. All spotters in the area who are not members of the existing London Clubs are advised to get in touch with Mr. Wyndham, enclosing S.A.E. for reply.

London and Coventry. A new club has recently been affiliated which has branches in London and Coventry. The following visits have been arranged : **Coventry Branch, April 28**—Rugby, Northampton, Wellingborough, Kettering ; **Coventry Branch, May 5**—Crewe Works, Stoke, Stafford, Alsager, Uttoxeter, and Wolverhampton Sheds ; **Coventry Branch, May 19**—Birmingham and District. Other branches in the West Midlands are being formed. Railway photographs are required for resale to assist club funds. All enquiries to Mr. R. H. Bruce, 3 Stapleton Hall Road, Stroud Green, London, N.4.

South Yorkshire L.S.C. Mr. K. Staniforth has resumed as secretary of this club. All enquiries should, however, be addressed to the assistant secretary, Mr. D. Marshall, 30 Brook Street, East Dene, Rotherham, Yorks. Branches are to be formed in Sheffield, Barnsley and Doncaster. Meetings will be held fortnightly on **May 1, 15 and 29** in the Temperance Hall, Wellgate, Rotherham. The following trips have been arranged : **May 19**—Leeds area ; **May 25**—Doncaster Works and Shed ; **June 16**—Derby Works, Crewe Works, 17A and 17B. Coach fare 18/-. Details of these trips from Mr. Marshall, enclosing S.A.E.

Gloucestershire L.S.C. The following relief trip to Cardiff district has now been arranged. **Sunday, May 26**—Visit to 86 A, C, E, 88 A, B, C. Fares from Gloucester 11/-, Bristol 9/- approx. Full details from Area Sec., Mr. P. J. Sharpe, The Nook, Huntley, Glos., enclosing S.A.E.

Bristol L.S.C. A secretary is urgently needed to assist in the operation of the Bristol Group, which at the moment is under the organisation of Gloucestershire L.S.C. Anyone over 15 interested in this work should apply to Area Sec., Gloucestershire L.S.C., for further information.

SMALL ADS

Announcements made in this column cost only 4d. per word and will be read by upwards of 27,000 people. Insertion, which must be prepaid, to be addressed to "T.I." Small Ads., Craven House, Hampton Court, Surrey.

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WAKEFIELD, Bradford-Leeds area. Photos wanted of G.N.R. trains up to 1935. Mann, 3 East Drive, Watford, Herts.

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LOCO ENTHUSIASTS. Why not join the B.L.S. this year ? Visits to Loco Sheds and Works. Postal query service. Cheapest Society offering monthly magazine. Minimum age 14. Send 2½d. stamp to Secretary, British Locomotive Society, 41 Hoadly Road, Cambridge, for particulars.

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MONMOUTHSHIRE L.S.C. Affiliated to I.A.L.S.C. Mr. Deakin is forming a Club for Spotters in the above area. For enquiries please send S.A.E. ; no callers. C. Deakin, 9 New Street, Pontnewydd, Cwmbran, Mon.

ELECTRIC RAILWAY SOCIETY JOURNAL. Specimen, 1/-, from 4 Sandhurst Road, Sidcup, Kent.

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